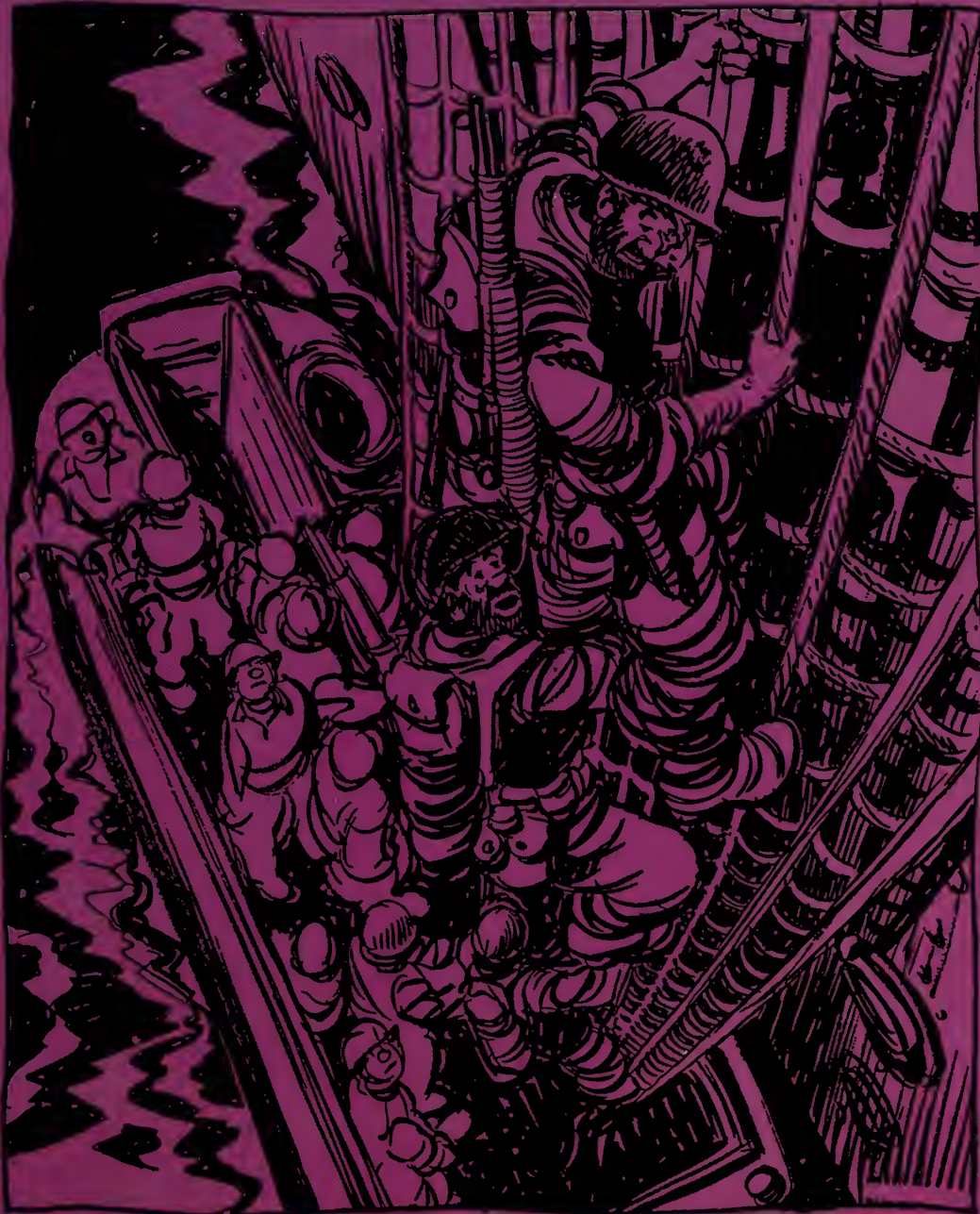


Infantry

May-June 1994



"When ya hit th' water swish yer feet around. They kin use it."

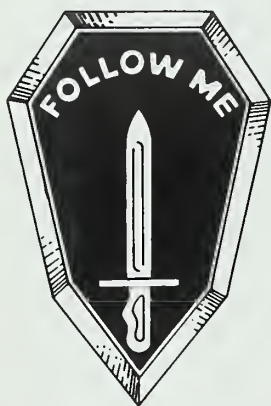
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Secretary of the Army

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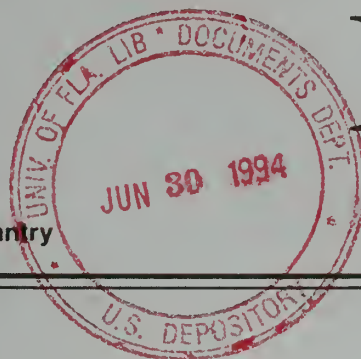
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Commandant's NOTE



MAJOR GENERAL JERRY A. WHITE Chief of Infantry

A Review of the Future Infantry Force

The single threat once posed by the Soviet Union and its surrogates has been replaced by an array of lesser threats, each of which nevertheless has the potential for complex, long-term involvement. The demands of our nation's economy, domestic priorities, and the historical American disdain for a large peacetime Army have dictated the transition to a smaller force. At the same time, technological advances have changed much of the very nature of warfare, to some extent offsetting the possible disadvantage of a smaller force.

The Army has already met the challenge of change in shifting from a *forward deployed* to a *force projection* stance. The evolution of doctrine in such manuals as FM 100-5, *Operations*, and those that derive from it, has led to the impetus for developing a new force design that will make the Army more deployable, versatile, and lethal. Throughout the Army, the proponent branches are aligning themselves with the force projection requirements and are looking at the way they intend to do business in the future. The Infantry will continue to play a leading role in that initiative as the core force for the rapid projection requirements.

In order to accurately anticipate and influence change, the Infantry School is conducting an overall holistic review of what the infantry force requirements are expected to be out to the year 2005. That vision will be the basis for a plan that ensures the efficient incorporation and sustainment of infantry doctrine, organization, equipment, and training for the future. This plan will also support infantry participation in the next redesign of the total Army force.

Salient characteristics of this review include the following:

- A detailed appraisal of the changing threat, the emerging doctrine, the downsizing of the Army, the restructure of the force, and the effects of limited resources. This appraisal will consider all echelons of infantry, from fighting position through battalion, and will include some consideration of select-ed brigade issues as well.

- A process that integrates and prioritizes the development of future infantry doctrine, organizations, and systems over which the school has pro-penency, and the training strategies that will best support our vision of what the infantry should be. Although this process is largely introspective, it will also involve coordination with other branches and schools.

- A phased approach that first establishes a baseline of current program information, articulates the vision, identifies the requirements of that vision, and then organizes and prioritizes our programs for the future. This is not to be considered a completed project. It is a continuation of the 1993 infantry branch assessment process and will include validation—by modeling and testing—of the desired infantry force and of the road we will take to achieve our goal.

An integral part of this process is a redefinition of the concept of *lethality*. We intend to use this redefined concept as the basis for assessing the alternatives that will go into structuring the infantry force of the year 2005.

Historically, we have tended to measure lethality in terms of the purely technical capabilities of

a particular weapon. Originally, lethality involved the ability of a round to hit the intended target and to kill or destroy what it hits. Recently, we have added the soldier's ability to acquire the target under conditions of limited visibility, or to acquire multiple targets either simultaneously or in rapid succession. While this view of lethality is still valid in assessing individual weapons, it falls short of assessing the lethality of the Infantry as a whole.

Historically, the *lethality* of the Infantry's weapons has steadily improved in terms of their range, accuracy, and killing power. Yet, the advantage gained by these improvements has been at best only temporary. All of the infantryman's gains in this area have been, or can be, nullified by corresponding or overmatching advances in the enemy's technology. Unprotected, he is still subject to indirect fires as he attempts to move about, and he faces many of the same problems his predecessors have faced through the ages.

The edge, at least in close combat, must be something more than a technological advantage. It must derive from all the future elements of combat power—maneuver, firepower, protection, and battle command—and must include the ability of the force to sustain the infantryman while he fights. Stated this way, this concept is in keeping with evolving ideas about lethality such as the following, quoted from the Training and Doctrine Command (TRADOC) Pamphlet 525-200-2, *Early Entry and Survivability Battle Dynamic Concept*:

Lethality involves more than simply maneuver and the application of firepower. Lethality is obtained from the synergism of force agility, technologically superior weapons, sound doctrine, and realistic training emphasizing the integration and synchronization of total force capabilities to achieve maximum combat power.

With this as a starting point, we can now develop a means of measuring lethality. Additionally, we must consider the lethality of units—the squad, platoon, company, and battalion. The measure of lethality in infantry units is greater than the sum of the elements described above; indeed, it encompasses the whole art and science of warfare.

Finally, within the Infantry School, this concept

of lethality is supported by the functional areas of doctrine, training, leader development, organization, materiel, and the soldier (DTLOMS). The unit organization that we want at each level must combine the elements of combat power with the most efficient means of sustainment at each echelon of the infantry force. It must be more than a tactical headquarters and a collection of subordinate units. Our goal is the attainment of a synergistic, enhanced, fighting entity as part of the power projection force.

Over the past two months, we have schooled ourselves on the baseline, the current force design, and then rolled up our sleeves and set to work. We have met our goal of having completed, by mid-May 1994, a detailed laydown of the force we envision. During the Infantry Commander's Conference in early May, we drew upon the collective experience of selected infantry commanders during a review and discussion of our vision.

Before the end of the summer, we expect to publish a White Paper that details our findings on and proposal for the infantry force of the future. This White Paper will address conditions of future conflict as they affect the Infantry, the requirement for a strong dismounted infantry force (mechanized and light), and the vision. It will also articulate the rationale behind the vision. I believe that, in light of the changing world political and economic situation, this is the most important contribution the Infantry School can make to the Army that will serve our nation beyond the year 2000.

This review will result in a more versatile, lethal, mobile, and deployable infantry force with an active and relevant role in combat operations and in operations other than war; a force that will wed technology to our evolving concepts of *battle command*, *battlespace*, and *information operations*; a force that is provided with the best doctrine, organizations, equipment, and training available; and—in the words of Army Regulation 10-6, *Branches of the Army*, describing the Infantry—a force that will remain “the nucleus of the Army's fighting strength around which the other arms and service are grouped.”

INFANTRY LETTERS



PROTECTING SOLDIERS IN COLD-WET CONDITIONS

Lieutenant Colonel Jack H. Cage, in his article "Light Infantry in Cold-Wet Conditions" (INFANTRY, November-December 1993, pages 11-12), raises serious concerns about the performance of the extended cold weather clothing system (ECWCS) parka in wet weather. He and his soldiers went to the field believing their Gore-Tex parkas would provide waterproof protection. Instead, they encountered unusually severe weather, and the garments failed to keep them dry.

Essentially, Colonel Cage was right in trying to find out why this happened and how light or dismounted infantry soldiers could be protected in cold and wet weather.

Since my company, W.L. Gore & Associates, Inc., manufactured the fabric used in all of the parkas worn during this exercise, I was also concerned with determining what had caused this situation. After reading Colonel Cage's detailed description of what happened and the reports of the personnel from the Army's Natick Research, Development, and Engineering Center who investigated the situation, I believe the following observations are relevant:

Natick's position that the ECWCS is designed for use only in "cold" conditions is debatable; it certainly does not reflect the original intent of the program under which these garments were developed. The requirement documents of both the U.S. Army and the U.S. Marine Corps mandate that the ECWCS be functional in the temperature range of 40 to -25 degrees Fahrenheit and that the shell garments (the parka and trousers) be constructed of materials that are water-resistant (Army) or waterproof (Marines) and moisture vapor permeable. The reason for this is that the pri-

mary function of the parka and trousers is to provide a windproof barrier and keep the clothing worn under them dry. As Colonel Cage and his soldiers can testify, the weather can get exceedingly wet and soldiers can become dangerously cold at 40 degrees.

While I may disagree with the Natick personnel concerning the intent of the original ECWCS design, they are accurate in saying that the current parka design will not provide waterproof protection. But this does not mean waterproof garments cannot be constructed using Gore-Tex fabric. The material itself is absolutely waterproof and has been used successfully in both commercial and military wet-weather garments in some of the world's worst climates. If this is the case, then why didn't these garments provide the protection the soldiers expected?

First, the ECWCS parka was designed more than ten years ago and used state-of-the-art features to make it as weatherproof as possible. Unfortunately, at that time, we did not realize the importance of sealing all the seams in a garment. Therefore, the seams attaching the zippers in front and under the arms are not sealed and allow water to enter through the holes made by the stitches. Although one would not expect these tiny stitch holes to cause significant problems, we learned over time that they do contribute to leakage in a garment.

During the past decade, we have also learned to appreciate the effect of *wicking* on garment design. This term is used to describe the tendency of a material to transfer moisture from one location to another. In the case of the ECWCS parka, the lining material wicks moisture from any point that gets wet to areas well removed from that point. This means that moisture on the hood lining wicks down the back of the

garment, unless the hood is raised as soon as it begins to rain. Water entering the stitch holes along the zippers can migrate to the areas around the chest and back; and if a soldier is not wearing waterproof trousers, the trouser material becomes saturated, and where the trousers contact the lower lining of the parka, it will wick moisture up into the body of the garment. In this situation, the soldier can become soaked even if his garment does not "leak."

The statement that "the PTFE suit's water-resistant capability might be degraded after repeated wear and laundering" should not have come as a surprise. Natick personnel who investigated this situation determined that about half of the garments worn by Colonel Cage's soldiers had been manufactured in 1985 and, under average wear conditions, should have reached the end of their service life in 1989. We recommend that commanders have their soldiers inspect the garments periodically for excessive wear, paying particular attention to garments with contract dates more than four years old. But even if Colonel Cage had done this, half of the unit would still have had garments well within their service life.

Can soldiers do anything to improve the performance of the materials in these parkas? The answer is an unqualified yes.

First, many soldiers think the Gore-Tex fabric used in their parkas is fragile and don't wash the garments until absolutely necessary. The truth is that this material is very tough, and the water-repellent finish performs better when it is clean. The material is actually constructed of two fabrics laminated to a film. When the laminate is manufactured, a water-repellent finish is applied to the exterior fabric, but this finish is not what makes the laminate waterproof. The film provides this

quality while the finish causes water to bead on the surface of the exterior fabric, reducing its tendency to wick water toward the unsealed areas. By getting water to run off the surface, we keep the material from feeling cold and clammy.

Another benefit of the water-repellent finish is that it allows passage of moisture vapor more readily from inside the parka. Without this finish on the fabric, water can soak in and cool the surface as it evaporates. Moisture generated by a soldier's body in the form of vapor can pass easily through the laminate unless the vapor contacts a cool surface; then it condenses into a liquid (just as warm breath does when it contacts a cool piece of glass). Once this occurs, the water must be re-vaporized before it can pass through the laminate. It is readily apparent, then, that the water-repellent finish should be kept in good shape. Fortunately, this is not difficult.

When water no longer beads on the surface, the garment should be washed and then dried in a standard home dryer on the permanent press or sturdy cotton setting. This is important because the

heat in the dryer helps prolong the life of the finish. Simply washing and drying the garment may restore its ability to make water bead on the surface. If water still does not bead on the surface, ironing the parka, using a warm steam setting (for synthetics or nylon), may temporarily restore the fabric's water repellency. After the garment has had extended wear, however, a soldier may have to maintain surface beading by applying a commercially available non-silicone water repellent (such as Scotchgard, Ultrathon, or Prevail brands) to the outer fabric. These steps may be repeated as necessary.

Unfortunately, given the current situation relative to the ECWCS parka design, I have to agree with Colonel Cage's position that soldiers in light infantry units and dismounted soldiers in mechanized units need the standard Army wet-weather parka and trousers (WWPT) in addition to the ECWCS to protect themselves during severe wet conditions. This is certainly not an acceptable answer, however, if soldier's load is considered, and the Army and the

Marine Corps are working aggressively toward a solution. They have launched an 18-month program with Natick to redesign the ECWCS parka and trousers to eliminate the problems described. If this program is successful, soldiers should not have to carry both the WWPT and the ECWCS parka and trousers. Until that time, I think the following recommendations are in order:

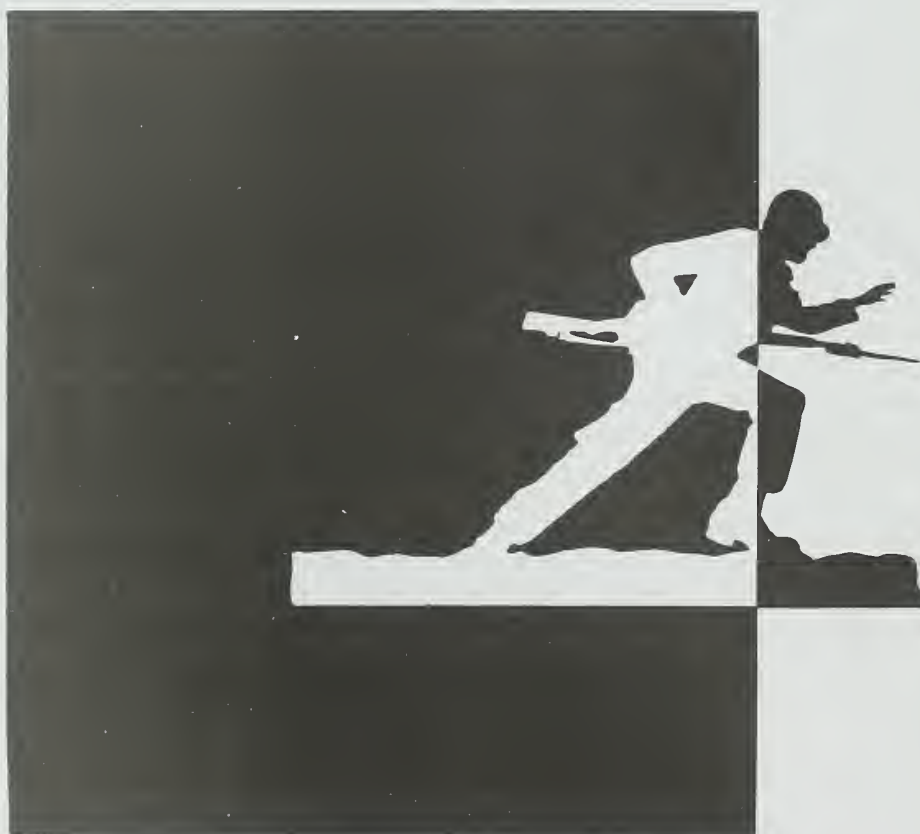
- Take the WWPT to the field to augment the ECWCS parka and trousers if severe wet weather is expected.

- When using the ECWCS parka in wet weather, also wear the ECWCS trousers to prevent wicking from the BDU trousers onto the parka's lining.

- Follow the cleaning instructions described here, and as the garment ages, restore the water-repellent finish as described.

- Inspect garments periodically and turn in worn-out items.

S. NICHOLAS ALLEN
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Albuquerque, New Mexico



INFANTRY NEWS



COMBAT IDENTIFICATION for dismounted soldiers is part of the overall U.S. Army Combat Identification Program, aimed at preventing fratricide. The objective is to enable a soldier to identify friendly forces on the battlefield and also to be recognized by the systems supporting those friendly forces.

Millimeter wave query-answer technology will be the basis of a near-term combat identification system. Although this system will initially be developed first for selected helicopters and ground vehicles, it is also being investigated for use by dismounted soldiers.

Many factors must be examined in regard to the soldier as a weapon system. These include equipment weight, bulk, human factors, manpower and personnel integration, and human safety. Another important consideration is the way a dismounted soldier operates in his battlespace. The fact that he often fights at short range, in built-up areas, in heavy foliage, or other confined spaces may require different approaches to combat identification.

In addition to these soldier considerations, the program will also address the technology's compatibility with other combat identification systems, the weight and logistic burden for the soldier, and integration with planned future systems, such as Land Warrior and 21st Century Land Warrior. (See "Enhanced Land Warrior Program," by Captain Mark A. Conley, *INFANTRY*, March-April 1994, pages 20-22.) Millimeter wave technology appears promising for use on soldiers if the components can be made small enough.

The combat identification effort for the dismounted soldier will begin with a comprehensive analysis of fratricide incidents, their causes and potential solutions, and recommended technical approaches. The analysis of this data will allow for the development of solu-

tions in terms of doctrine, training, leader development, organizational structures, and materiel. It will help materiel developers, in particular, identify existing or emerging technology that can be applied to the problem. In addition, the program will investigate and develop combat identification technologies that can improve the dismounted soldier's situational awareness and reduce potential fratricide through target identification.

The problem of fratricide will be difficult to overcome because of the technical challenge of fielding a device that can distinguish friend from foe without also disclosing life-threatening information to the enemy in the chaos of battle.

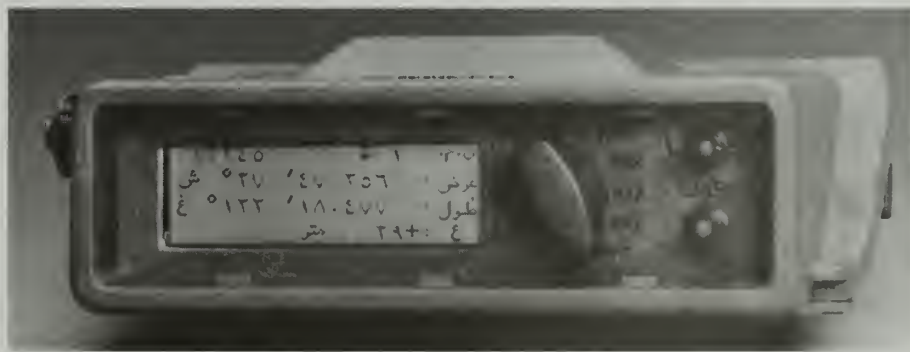
THE ARMY ALL-WEATHER coat (black, double-breasted) should be professionally treated for water repellency after each cleaning.

The U.S. Army Natick Research, Development, and Engineering Center made this recommendation after receiving reports of incidents in which the coat lost its water repellency after dry cleaning.

Anyone with questions may call the Natick Hotline, DSN 256-5341 or commercial (508) 651-5341.

AN/PRC-140 (Saturn) radios have been delivered to the U.S. Army Joint Surveillance Target Attack Radar System (JSTARS) Light Ground Station Module program. A UHF satellite applique used in conjunction with the radio allows for continuous data distribution while the ground station is on the move.

This radio also provides anti-jam, fast frequency-hopping voice and data functions for maximum tactical communications advantage. The AN/PRC-140 is scheduled for integration into JSTARS



AN/PSN-10 GPS (global positioning system) units that can operate and display data in either Arabic or English have been produced and delivered to the Saudi Arabian National Guard. With one of these units, a user can switch between Arabic and English operation using a simple toggle switch.

The AN/PSN-10 GPS, which was

used successfully during Operation DESERT STORM, is in its third generation of upgrades and now has six channels for continuous tracking.

The display is also available in French, German, Italian, and Spanish and will soon be available in Korean and Chinese as well.

Block I ground station modules.

The AN/PRC-140 provides single channel AM and FM VHF communication as well as single-channel AM, FM, and anti-jam electronic countermeasures voice and data in the UHF band. The AN/PRC-140 also features a data interface for digital message transfer and is compatible with most encryption devices.

CHAMELEON-LIKE CAMOUFLAGE for uniforms is still many years away, but the Army's Natick Research, Development, and Engineering Center is working on various technologies that will eventually make this kind of cam-

ouflage possible:

Thermochromic and Photochromic Colorants. Commercially available thermochromic (heat sensitive) and photochromic (light sensitive) colorants are being considered as an environmentally dependent, passive camouflage solution. Both offer limited background adaptive camouflage properties, as they rely on environmental conditions to make the changes. For example, in thermochromics the change is controlled by an integrated heating or cooling device. For both of these materials, the uniform could adapt from day to night or in response to subtle terrain changes. Although these technologies have been widely used commercially in novelty

items, applying them to military performance criteria, such as color stability and durability, requires continued research.

Electrochromic Colorants. Another possible approach is electrochromic (electrically stimulated) colorants. Using this system, the camouflage uniform would change color according to the information it obtained from the surrounding landscape. Ideally, miniaturized spectrophotometers would act as "cameras" to gather information from the surrounding terrain. That data would then be processed through a computer "matrix" effect that sends out the appropriate electrical signals and translates the information into a specific

BRADLEY CORNER

Shortages in ammunition, training time, and range availability for live fires demand that units use training devices to sustain gunnery proficiency. Two Bradley training devices will become available in the near future:

Thru-Sight Video (TSV). The TSV is a vehicle-appended system that provides real-time video and audio recordings of the gunner's sight picture during gunnery training and tactical engagement exercises. It consists of an audio-video recording sub-system and an after-action review (AAR) sub-system.

The audio-video recording sub-system is a compact, clamp-on, beam-splitter that creates a high-resolution image on a miniaturized solid state television camera. The image is recorded by an environmentally enclosed video cassette recorder (VCR) bolted to the vehicle's bustle rack. A monitor in the vehicle turret adjusts the camera to the vehicle's sight picture and also allows for on-board playback of the crew engagements.

The AAR sub-system, which is located at the designated AAR area, consists of a high-resolution monitor, a VCR, and a video digitizer. It allows playback of the engagements with freeze-frame and zoom capabilities.

The availability of real-time continuous recording allows crew evaluators to critique a crew's fire commands, BOT/TOT (burst on target/time on target), point of aim, lead, time to fire/kill, and driving techniques.

Precision Gunnery System (PGS). The PGS simulator is a "strap-on" precision device that develops and sustains gunnery proficiency while allowing crewmen to train on their own vehicle. Crewmen can train BOT/TOT techniques in a range environment without depending on live-fire gunnery.

The system consists of a tracer burst obscuration system (TBOS) clamped onto the gunner's and the commander's sights. The TBOS provides realistic obscuration, tracer imagery, target hit, target miss, and ground impact, along with the sounds of gunnery sequences, firing, and target impact.

The PGS also has a training data retrieval system. It allows evaluators to remove a "Smart Card" from the control panel on the vehicle and insert it into a computer in the AAR briefing area. The computer displays target and engagement data received from the card, allowing evaluators to critique crew engagements.

The PGS is fully compatible with the MILES (multiple integrated laser

engagement system) battlefield. It can send and receive hit, kill, and miss signals from other vehicles equipped with PGS or MILES. During force-on-force training, PGS can distinguish between mobility, firepower, and catastrophic kills. It also interacts with the laser target interface device (LTID). The system comes with an adapter that will interface LTIDs with target mechanisms, allowing for three-round or five-round target hit sensing.

Computer simulations, such as UCOFT, SIMNET, CCTT, continue to be valuable, given the current budget and ammunition restrictions, but Bradley units must not become too dependent on them. The TSV and the PGS training devices allow Bradley crews to continue training on the actual equipment they will use if they go to war. These devices cannot replace live-fire gunnery, but they do provide commanders with a means of assessing training proficiency.

The Thru-Sight Video will be fielded in the 4th quarter of FY 1994, with each battalion receiving one set consisting of four systems. The Precision Gunnery System will be fielded during FY 1995, with each battalion receiving 14 systems.

color system. A spectrographic image of the soldier's background would then instantly appear on the uniform.

Dynamic Visual Camouflage.

Dynamic visual camouflage (DVC), a biotechnology approach based on active proteins, may be the ultimate solution. It would allow the soldier's uniform to change colors constantly to blend with his surroundings.

DVC is the transfer of colored light through optical light receptors connected to conductive polymers for electronic signaling. The ultimate goal is to develop a system that can be applied to the soldier's standard camouflage uniform allowing him to move from one landscape to another with the DVC quickly matching all sides to the new environment. For example, the uniform of a soldier in the woods would match the greens and browns of his surroundings; if he then moved to a wheatfield, the same camouflage uniform would translate and transmit the oranges, tans, and browns of the new environment in seconds.

Camouflage techniques that would protect the soldier from night vision and thermal imaging technology are also now being developed.

AERIAL RESUPPLY using parafoils and hang gliders is being examined under a project managed by the Early Entry Lethality and Survivability (EELS) Battle Laboratory. Parafoils or gliders, equipped with guidance systems connected to global positioning system (GPS) satellites, will increase both the safety and the accuracy of airdrops.

An aircraft can release cargo on either parafoils or gliders at 25,000 feet altitude and 10 to 40 miles away from the drop zone. As the cargo descends, an onboard guidance system picks up the GPS signal using ground coordinates loaded into the system while it was in the aircraft. The system activates servo-mechanisms to guide the parafoil or glider in relation to each navigational reference point on the way to the drop zone.

A large-capacity parafoil is equipped

with a braking parachute and reefing system. The chute slows the drop as the foil is gradually extended, or reefed, to its full size.

Drops can be made at night. Since parafoils and gliders have low radar signatures, they can be dropped undetected. Loads that are detectable by radar can be covered with the newly created stealth blankets.

Cargo aircraft do not have to fly in large formations as sizable airdrops now require. Since planes can be a long way from the drop zone, the locations of covert teams are not compromised.

In a demonstration at Fort Bragg, a parafoil with a 1,200-pound load was released from a C-130 aircraft at 8,000 feet; at the same time, paratroops exited another aircraft. With a ground level wind speed of 10 knots gusting to 50 knots at ground level, the jumpers were blown completely off course, but the cargo landed within 100 meters of its target.

EELS is one of six battle labs in the U.S. Army Training and Doctrine Command working to prepare the Army for future battlefields.

THE ARMY'S TUITION Assistance Task Force is developing a policy that will provide soldiers a clear statement of what tuition assistance they can expect to receive, regardless of when or where they use it.

Soldiers use college courses to remain competitive in a smaller Army and to prepare for civilian employment after separation. But increased demand, along with a strain on funds for education, has left soldiers unsure of the tuition assistance money that will be available to them from one semester to the next, and from one installation to another.

The task force's recommendations will be developed over the next few months and should be in place by the end of this fiscal year.



THE GPS-112 RADIO enables rescue aircraft to locate downed pilots almost immediately. It consists of the PRC-112 survival radio and added global positioning system (GPS) technology.

Using this radio, a pilot behind enemy lines can automatically send his location to rescue teams using an electronic signal that takes a fraction of a second and is almost impossible to detect or trace. An interrogator unit—consisting of a computer, modem/GPS receiver and transceiver radio unit and housed in a briefcase aboard an airborne rescue craft—receives and verifies the

pilot's location.

Even when a pilot is unable to operate the radio, rescue teams can still receive location readings from the equipment, which is to be switched on before take-off. The air or ground rescue center can also send messages, shown on the radio's liquid crystal display, to help the pilot evade hostile forces or facilitate his rescue.

The GPS-112 radio has proved successful in simulated pilot search and rescue exercises during large-scale operations



Omaha Beach, 6 June 1944

Lessons from Company C, 2d Ranger Battalion

MAJOR JOHN W. NICHOLSON, JR.

As the size of the United States Army decreases and the potential for regional conflicts around the world increases, U.S. soldiers can learn a lot by studying the initial combat actions of their predecessors in World War II. Despite overwhelming air, naval, and industrial might, U.S. infantrymen often found themselves outgunned and outnumbered as they closed with their enemies.

One such action was the experience of Company C, 2d Ranger Battalion, on D-Day, 6 June 1944, at Omaha Beach on the coast of Normandy. In accomplishing its mission despite seemingly impossible odds, this unit sets a standard for today's soldiers who are preparing for the first fight of the next conflict.

AUTHOR'S NOTE: In preparing this article, I have depended heavily upon the recollections of the surviving men of Company C, as compiled and published in Czechoslovakia immediately after the war (Roughing It With Charlie, by Edwin M. Sorvisto, Novy Vseisk, 1945). I also interviewed Ralph E. Goranson, who commanded the company in 1944—as I was privileged to do more recently, in 1991-1992.

Although not one of the three 2d Ranger Battalion companies to land at Pointe du Hoe in 1944, Company C will scale the cliffs there on 6 June 1994 as part of the 50th Anniversary D-Day commemoration.

Company C's mission was to clear enemy positions on Pointe de la Percee to prevent the Germans from placing enfilading fire eastward down Omaha Beach where the 29th Infantry Division would land. Upon accomplishing their mission, the Rangers were to move west, clearing enemy positions along the cliffs until they linked up with the rest of the 2d Ranger Battalion at Pointe du Hoe.

The amphibious assault plan called for the 16 Sherman tanks of Company B, 743d Tank Battalion, to land on Omaha Dog Green at 0625. As the tanks suppressed the local German positions, Company A, 116th Infantry, 29th Division, would land and seize the Vierville draw. The Ranger company would land six minutes behind Company A, 116th Infantry, on Omaha Dog Green, follow it up the Vierville draw, then attack west to their objective at Pointe de la Percee (Map 1).

As often happens in combat, however, the primary plan did not survive the first shot. The German defensive positions were hardly touched by the extensive bombardments before H-Hour, and the remaining supporting naval and air fires shifted inland as the landing craft approached the beach. Visibility was good, and no smoke obscured the fully

alert German gunners who poured accurate fires across the beach and 200 meters out to sea. Only eight of the tanks survived the swim to shore where they immediately came under accurate German artillery and antitank fire. Company A of the 116th Infantry lost one-third of its force on the way to the beach, and the remaining four boatloads were decimated at the water's edge. In one boat, all the soldiers fell to machine-gun fire before the first one could step off the ramp. Within minutes, the unit lost all its officers, most of its NCOs and almost 60 percent of its troops. The survivors sought cover behind German obstacles or among the bodies of their fallen comrades.

At 0645, assault landing craft (LCA) 418 and 1038, carrying the 68 Rangers of Company C, 2d Ranger Battalion, dropped their ramps into the surf off Omaha's Dog Green Beach. Within seconds, mortar and antitank rounds hit LCA 418, killing 12 men of 1st Platoon. German machineguns fired directly into LCA 1038 hitting 15 men of the 2d Platoon as they plunged into neck-deep water. Without pausing to reorganize, the Rangers moved out of the water and across 300 yards of open beach toward the Vierville causeway. Under mortar, antitank, machinegun, and rifle fire for

the entire distance, the company lost more than half of its men—19 killed and 18 wounded—by the time they reached the limited cover on the other side of the beach.

The Enemy and the Terrain

There were four draws through which vehicles could exit Omaha Beach, but the Vierville exit was the only one with a hard-surface road and therefore one of the most strongly defended points on the beach.

The German defenders included members of the 352d Infantry Division, built around a cadre of veterans with more than two years of combat experience fighting Russians. Although this unit was not the equal of a 1939-era German infantry division, it was one of the best in Normandy. The division had deployed from German training bases to St. Lo that winter and had manned the Omaha Beach defenses since early spring. Inexplicably, Allied intelligence had failed to detect the division's arrival at Omaha until just days before the invasion.

Roughly 100 of these resolute defenders, armed with antitank guns, mortars, infantry howitzers and machineguns, manned the Vierville *Stuetzpunkt* or strongpoint, which sat atop 90-foot bluffs overlooking the shoreline. The strongpoint consisted of six concrete pillboxes, trenches, dugouts, and tunnels surrounded by barbed wire and minefields covering extensive obstacle belts on the beach below (Map 2). Experienced German leaders had sited these positions within folds in the terrain from which they could place interlocking fires along the length of the beach, while protected from offshore Allied direct fires. The beach could also be swept by 88mm gun fires from Pointe de la Percee, hence the importance of Company C's mission.

Considering the piecemeal arrival of landing craft on this section of the beach and the lifting of U.S. supporting fires, the Germans actually enjoyed superiority in both numbers and firepower during the first critical hours of this fight. One of the few German vulnerabilities was found along the cliffs to the west of the

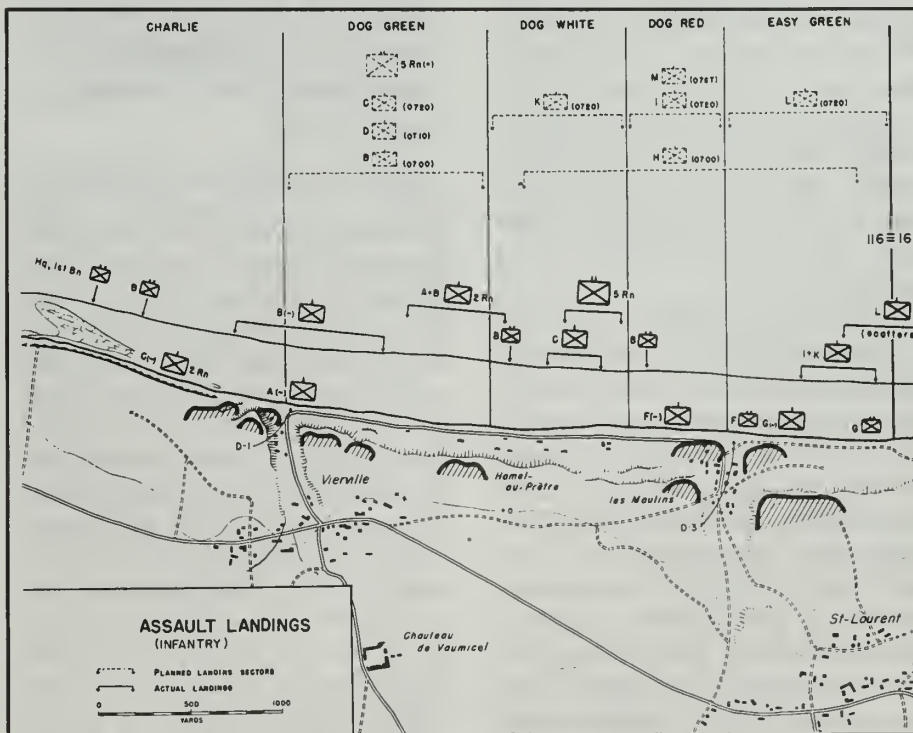


Map 1. The Mission

draw. Although the defenders had placed barbed wire and minefields along the top of these bluffs, most of their weapons were positioned to fire at the more obvious avenue of approach up the Vierville draw. Just as at Pointe du Hoe, the Germans never expected the Americans to attempt to scale 90-foot cliffs in daylight under fire.

Scaling the cliffs is exactly what Captain Ralph E. Goranson, the Ranger company commander, decided to do. Given his losses and the fact that the Germans blocked his primary route, Goranson ordered Lieutenant William D. Moody, leader of 1st Platoon, to scale the cliff west of the Vierville draw and establish an alternate route for the com-

pany's objective. Using their fighting knives to dig handholds, Moody—along with Sergeant Julius Belcher, and Private First Class Otto Stephens—scaled the cliff as the defending Germans lobbed hand grenades over the side. Establishing a foothold in a minefield 15 feet below the crest of the cliff, Lieutenant Moody and his Rangers dropped toggle ropes for the rest of the unit. As the company moved up the ropes (including five wounded Rangers who crawled across the beach to rejoin their comrades), Captain Goranson sent a runner to take charge of 20 men from Company B, 116th Infantry, whose boat had landed near the Ranger position. Although they did not realize it at the



Map 2. Assault Landings and Enemy Locations

time, they were the first U.S. troops to fight their way off Omaha Beach and assault the German defenses.

As the Rangers expanded their foothold at the top of the cliff, they discovered a fortified house and entrenchments that were part of the Germans' Vierville strongpoint. Although this enemy position was not their objective, the Rangers recognized its importance and immediately assaulted it. Goranson's force, outnumbered more than two to one, fought with a vengeance, paying back the Germans for the losses it had suffered on the beach.

Two Ranger NCOs spotted a German machinegun nest that had inflicted heavy casualties on Company C and was continuing to kill the men of the 116th Infantry. They knocked out the concrete pillbox by tossing a white phosphorous hand grenade inside and shooting the crewmen as they ran out the back door. This close-quarters fighting continued for hours as the Germans reinforced the strongpoint and continually counterattacked the Rangers.

As the Ranger force gradually prevailed over the Germans, each individual Ranger—despite their local success—experienced his own internal struggle with the combat emotions of fear, loss, and isolation. Having lost its radios on the beach, the unit had no knowledge of Allied successes elsewhere in Normandy. From their cliff-top position, the Rangers could see only signs of U.S. defeat in the form of casualties, burning vehicles, and sunken landing craft.

Captain Goranson recalls, "I was worried until three o'clock in the afternoon of D-Day because we had no radio or physical communications with any other unit, and I thought we were to be stranded, alone, for quite some time." Lieutenant Sidney A. Salomon, 2d Platoon leader, said, "Once atop the cliff, I felt bad when I found out the number of casualties we had suffered.... Up until noon, I thought the invasion was a failure and wondered if we could make a successful withdrawal and try again in the near future."

Compounding the Rangers' sense of isolation was the intermittent shelling they received from Allied vessels off shore. The first incident involved a ship that unexpectedly fired 20mm rounds at the German strongpoint. Fortunately, some of the rounds actually hit the remaining German positions. An hour later, a U.S. destroyer opened up with five-inch guns from 500 yards offshore. This time the Rangers were not so lucky, and two men were wounded. Quick-thinking naval observers on the beach detected the error and called off the fire. Around noon the naval shore fire control party accurately directed the fires of the battleship USS Texas onto the remaining German positions east of the Vierville draw. After four salvos from the ship's 14-inch guns, the surviving Germans surrendered.

Despite all of these conditions, the 31 Rangers of Company C—within seven hours after they first assaulted the strongpoint—had killed 69 Germans,

Using their fighting knives to dig handholds, Moody—along with Sergeant Julius Belcher, and Private First Class Otto Stephens—scaled the cliff as the defending Germans lobbed hand grenades over the side.

taken one wounded prisoner, and forced the remaining enemy to withdraw. After securing the position, Captain Goranson led a reconnaissance patrol to his original objective, Pointe de la Percee. The patrol leader, Staff Sergeant Elijah Dycus, confirmed that naval gunfire had destroyed the now deserted enemy positions. In contrast to their high casualties while crossing the beach, the Rangers had suffered much less during the close quarters fight. Most important, they accomplished their mission by destroying the enemy positions that were placing enfilading fire onto the 116th Infantry on Omaha Beach.

After contacting the 2d Ranger

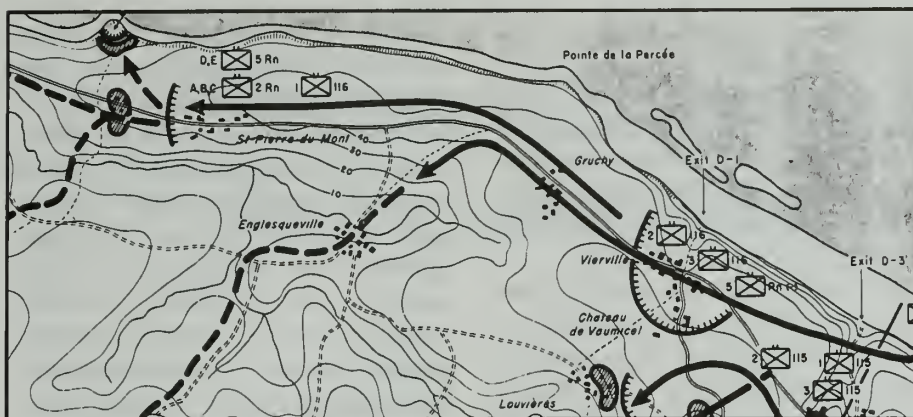
Battalion S-3, Captain Goranson coordinated the handover of his position to the 116th Infantry. At 2200, the 28 walking members of Company C linked up with the 5th Ranger Battalion and Companies A and B of the 2d Ranger Battalion at the town of Vierville. The next day, 7 June 1944, they were part of the point element as the 5th Ranger Battalion and Companies A, B, and C of the 2d Battalion attacked west to relieve the 2d Ranger Battalion(-) at Pointe du Hoe (Map 3). The emotional pendulum of combat finally took a positive swing as Company C's Rangers were reunited with their buddies from the other companies.

Reasons for Success

How did the Rangers of Company C manage to cross 300 yards of open beach under fire in broad daylight, scale a 90-foot cliff, breach a minefield, successfully assault an enemy strongpoint against superior numbers, and win? How were they able to do this after suffering more than 50 percent casualties in the first 30 minutes of their first combat action? Finally, what enabled these men to fight as well as they did, while dealing with the powerful emotions of fear, loss and isolation?

The company's success was due to a combination of demanding and realistic training, thorough preparation for combat, exceptional leadership, superior physical fitness, and strong unit cohesion.

Training. Demanding and realistic training was a hallmark of the 2d Ranger Battalion from its inception. Formed on 1 April 1943 in Camp Forrest, Tennessee, the battalion of volunteers conducted eight months of rigorous training in the United States on basic infantry skills with special emphasis on speed marching, land navigation, hand-to-hand combat, patrolling, amphibious operations, live-fire assaults, and night raids. The battalion commander, Lieutenant Colonel James E. Rudder, whipped the unit into shape by integrating the toughest possible conditions into every task the unit performed. Limited sleep, no rations during extended patrols, and night



Map 3. 7 June 1944

operations were standard.

Live-fire exercises were performed to the highest standards. Performing amid fear became a condition in this training program. Since failure meant separation from the unit, fear of failure was real. And since physical danger was involved in most Ranger tasks, all the soldiers learned to perform with this fear as well. By the time the 2d Ranger Battalion left the U.S., they were physically, mentally, and emotionally tough.

After the battalion deployed to England, the training plan focused more on amphibious operations, live fire assaults, and cliff climbing. Unit flexibility was developed through cross-training until each Ranger, regardless of his duty position, was an expert on all weapons and equipment, both Allied and Axis. The battalion trained on terrain similar to that of the objective area at the Isle of Wight and at the U.S. Assault Training Center at Bude, England. Colonel Rudder further developed individual initiative by having his men conduct their 200-mile movement from Bude to Isle of Wight by two-man buddy team.

In addition to producing highly skilled soldiers, this training program instilled aggressiveness, initiative, and confidence. In turn, these qualities further lessened the effects of fear and isolation on the battlefield.

Preparation for Combat. Planning and rehearsing for Operation OVERLORD were extensive and thorough. The training events consisted of rehearsals of the tasks the unit would perform in combat. In April 1944 the battalion conducted a full-scale

rehearsal of the invasion during Exercise Fabius I. From that time forward, the unit and its leaders knew their specific D-Day tasks and, equally important, the specific conditions they would encounter on their objective. This knowledge enabled them to develop a simple, but effective, plan.

Captain Goranson describes the planning as follows:

We received excellent [information] in the form of photographs, etc., right up to embarkation. Based on this, we (myself, Moody, Salomon, and the

Establishing a foothold in a minefield 15 feet below the crest of the cliff, they dropped toggle ropes for the rest of the unit.

senior NCOs) agreed on two plans: Plan 1, follow the 116th up the Vierville draw and [turn] west to [Pointe de] Percee.... Plan 2, recon a good route up the cliffs and engage the enemy.... We hammered the men with one big idea—Get across the beach ASAP, then execute Plan 1 or 2!

Today's infantrymen should take note of two important points in Company C's planning process. First, given sufficient planning time, the company commander included his platoon leaders and senior NCOs in the process. The plan belonged to all of them. Second, Goranson's intent was simple and clear, "Get across the beach ASAP, then execute Plan 1 or 2." In the confusion of

the soldiers' first combat, this simplicity undoubtedly contributed to their eventual success.

Company C refined their planning throughout May until each man knew exactly where he was going every minute of D-Day. Another benefit of the thorough troop-leading procedures was that all men in the unit were so familiar with the plan that even the most junior of them could readily replace leaders who became casualties. The wisdom of this preparation was borne out, as two officers and 17 NCOs of Company C eventually became casualties on D-Day. While thorough preparation did not necessarily help the Rangers deal with the emotion that accompanied the nightmare of losing so many buddies, it did prepare them for the actions they would take when those men fell.

Thorough preparation for combat reduced fear of the unknown. By rehearsing as many of the combat tasks and conditions as possible, the Rangers lessened the enemy's ability to surprise them. When the volume and accuracy of the German fire prevented the company from executing its primary plan, the Rangers were prepared. "With so little of the company left, I just gave LT Moody the word to proceed with Plan 2 and hoped for the best," recalls Captain Goranson.

The unit's ability to execute Goranson's decision quickly resulted, in part, from thorough planning and rehearsals, which enabled them to surprise the Germans by attacking from an unexpected direction (up the cliff) and at an unexpected time (after suffering 50 percent casualties). This preparation enabled the Rangers to apply their remaining combat power at the decisive place (inside the enemy strongpoint) at the decisive time (while the enemy engaged Americans on the beach).

While the Rangers' aggressiveness and skill played a critical role in the close quarters fight, it is important to remember that thorough preparation played a major role in getting them off the beach and into the fight.

Leadership. Despite the shock of heavy casualties and the fact that this

was their baptism of fire, the leaders of Company C performed exceptionally well throughout the mission. The relatively small Ranger companies, 68 men each, were leader-heavy with three officers and 24 NCOs. Each platoon consisted of only two squads, so the platoon leader's span of control was tighter than that of a regular infantry platoon.

During the mission, the company was fortunate in that all of its officers and most of its NCOs survived the first 30-minute firefight. This facilitated rapid execution when Goranson ordered the cliff climb. The company commander made another smart decision in going after the German strongpoint instead of immediately pressing on to Pointe de la Percee. His actions revealed a clear understanding of the battalion commander's intent for his unit: to protect the western flank of the beachhead from German enfilading fire. By assaulting the cliff-top entrenchments, Company C attacked the most immediate threat to the beachhead's flank. Goranson's subsequent patrol confirmed the wisdom of his decision when it revealed that naval gunfire had eliminated any threat from Pointe de la Percee.

As S.L.A. Marshall points out in *Men Against Fire*, there is no substitute for inspirational leadership in combatting the fear of death among soldiers. Lieutenant Moody's actions during the assault provide a good example of such inspirational leadership by example. After leading the climbing party up the cliff and through the minefield, Moody personally led the assault into the German strongpoint. In the ensuing action, he killed the German commander, and then was killed by a German sniper. Upon Lieutenant Moody's death, the 2d Platoon leader, Lieutenant Salomon, immediately took charge and continued the assault. Captain Goranson led from the front throughout the operation and was struck more than once by enemy bullets—all of them lodging miraculously in his equipment.

These are just a few examples of the routinely courageous actions under fire that earned members of this company five Distinguished Service Crosses, ten Silver Stars, ten Bronze Stars, and 126

Purple Hearts in their 11 months of combat.

Physical Fitness. Physical fitness was a key to Ranger survival and success because it helped them overcome the paralyzing effects of fear. S.L.A. Marshall, in *The Soldier's Load and the Mobility of a Nation*, points out:

All men feel shock in battle to some degree. [When] the man is shocked nervously, and fear comes uppermost, he becomes physically weak. His body is drained of muscular power and mental coordination.... Fear and fatigue are about the same in their effect on an advance.

Omaha Beach was covered with men who were paralyzed by their fear and fatigue on 6 June 1944. While the Rangers also experienced fear, they were able to perform in spite of it. Leadership, training, and cohesion were fac-



tors, but superior physical conditioning was equally important in enabling them to cross the beach, scale the cliff, and accomplish their mission. The long run each morning on the beach on the Isle of Wight during January to June 1944 had certainly helped. The countless physical fitness sessions and training exercises in the wet sands of Florida and on the English coast undoubtedly contributed to their survival on D-Day as well. The upper body strength they developed through those same training events enabled them to scale the cliffs with their equipment. The ability of numerous Rangers to continue fighting after being wounded is further testimony to their superior conditioning.

Cohesion. The cohesion developed through 14 months of living and training

together before entering combat was essential to the company's success. This cohesion helped overcome the sense of isolation that has been attributed to fear and shock on the battlefield. The desire to avenge their fallen comrades spurred some rangers on to acts of heroism against the German position. It was unit cohesion that motivated wounded Rangers to rejoin their buddies and participate in the assault as best they could. In all, this unit cohesion produced a profound sense of loss over the horrendous casualties they had suffered.

In spite of the United States' tremendous military and industrial might in 1944, the success of its national effort on 6 June ultimately depended on the ability of U.S. infantrymen to close with and destroy a tough opponent. Despite 50-percent casualties, significant enemy advantages (in number, position, and firepower), and the emotional shock of fear, isolation, and loss, the Rangers of Company C, 2d Ranger Battalion, accomplished their mission because of their superior training, preparation, leadership, fitness, and cohesion.

Army doctrine continues to emphasize the importance of these fundamentals to mission accomplishment. The outstanding combat performance of U.S. Rangers, Special Operations forces, and 10th Mountain Division infantrymen in the streets of Mogadishu, Somalia, on 3 October 1993 clearly demonstrates that today's soldiers are still concentrating on these fundamentals.

As Army resources shrink in the coming years, we must remain focused on these basics if we are to win the first fight of the next conflict.

Major John W. Nicholson, Jr., commanded Company C, 2d Ranger Battalion, in 1991-1992. He previously commanded Company A, 2d Battalion, 325th Infantry (Airborne), 82d Airborne Division, and served in staff positions in the 82d Division, the 2d Ranger Battalion, and in the Department of the Army in Washington. He is a graduate of the United States Military Academy, also holds a degree from Georgetown University, and is now attending the School of Advanced Military Studies at Fort Leavenworth.

Forward Looking Infrared

And the Bradley Fire Support Vehicle

Infantrymen have long relied upon the indirect fire of the field artillery to complement their scheme of maneuver. In two World Wars, on the frozen hills of Korea, in the Ia Drang valley of Vietnam, and in battles on the Iraqis' home turf during the Persian Gulf war, U.S. artillerymen have been a vital element of the combined arms team.

The cover of night that once concealed our enemy has been stripped away by our technological lead, revealing his troop dispositions, his capabilities, and—most important—his vulnerabilities. Many tales have been told of Iraqi tankers demoralized by the sudden explosion of the vehicle next to them, hit at night and by an invisible Coalition tank firing from a position beyond the range of their own guns. Equally numerous are the accounts of enemy units suddenly subjected to precision artillery fire directed by observers they could not even see.

It is clear that U.S. forces do indeed dominate the night, but we can ill afford to rest on laurels earned at high cost in lives, money, and equipment in other wars and less successful battles.

Artillery forward observation will be as crucial as ever. The observer will still need to be far enough forward to influence the battle by providing responsive, accurate indirect fires. On today's fluid battlefield, that may mean the observer is well forward. If we expect him to do his job, we need to provide him the equipment to assure his survivability, his ability to acquire targets, and the means to communicate his information to the firing batteries. The answer to these requirements is the Bradley fire support vehicle (BFSV).

The BFSV will be the end result of a

retrofit of the M2A2 Bradley fighting vehicle with fire support team vehicle (FIST-V) conversion kits. It will retain the present Bradley signature to the maximum extent possible, and will significantly improve both the survivability and the mobility of the artillery support personnel with heavy maneuver units. It will replace the M981 tracked vehicles currently with company fire support teams (FIST) and the combat observation lasing teams (COLTs). Target acquisition will be greatly improved



through the addition of second-generation thermal imaging such as the forward looking infrared (FLIR).

The BFSV's major subsystems will include an improved north-seeking gyroscope as part of the FIST-V kit, single-channel ground and airborne radio system (SINCGARS) AN/VRC-12, radios, and a precision global positioning system (GPS) receiver. The vehicle's targeting system will include day-night thermal imagery, and its communications will enable the team to operate on four nets with its AN/VRC-12 family of radios. Digital message

devices, AN/PSG-5 and AN/PSG-2, will further improve the team's ability to transmit data. Fielding of the vehicle is planned for the first quarter of Fiscal Year 1998.

This, therefore, is the Bradley fire support vehicle; but what were the events that led to its development as a replacement for the M981?

Both the BFSV and the FLIR capability that will complement it received their impetus largely as a result of the Gulf war. That conflict demonstrated the extent to which our forces could seize and retain the initiative in night operations, as well as under other conditions of reduced visibility, and underscored the terrible cost of confronting a technologically superior opponent.

In August 1992 General Frederick M. Franks, Jr., Commander, Training and Doctrine Command, assigned the Dismounted Battlespace Battle Lab at Fort Benning the mission of ensuring that we continue to own the night on future battlefields. Key to this mission was the establishment of the Department of the Army Second-Generation FLIR Special Task Force in February 1993, under the auspices of the Battle Lab. Major General Jerry A. White, Commandant of the Infantry Center and School, and Mr. George Singley, Deputy Assistant Secretary of the Army for Research and Technology, serve as chairpersons of the task force.

The task force will work to improve current and future infrared technologies, and will do it in an environment of greatly reduced resources. Simply put, we must find a way to get more—and better—systems with fewer defense dollars.

One way of achieving this is through

horizontal technology integration (HTI), which draws upon the commonality of requirements and processes throughout the Army, thus rendering obsolete the costly and inefficient "stovepipe" development and procurement method of examining each weapon system singly. Applied to second-generation FLIR, the HTI initiative will dramatically improve combat power on the battlefield. Applied to the BFSV, it will double the combat identification range capability of the first-generation FLIR now in use; and it will reduce the likelihood of fratricide by improving our ability to distinguish friend from foe, even at extended ranges.

Extended combat identification range and reduced probability of fratricide are

not the only advantages of the BFSV. Other advantages will permit commanders to detect, identify, and engage targets at greater ranges; they will therefore have more time to make decisions and better synchronize fire and maneuver. Phototelesis technology will provide the ability to transmit FLIR imagery, improving command and control, along with the commander's ability to accurately assess the situation to his front.

The FLIR package also includes other improvements such as a digital electronic input-output port for automatic target cueing, target tracking, target recognition, battlefield digitization, combat identification, and other built-in test functions. The BFSV gunner-operator will then be able to electronically zoom

the target view to reduce the acquisition and engagement time, select white-hot or black-hot imagery—much as in the images now available in tank thermal sights—and insert annotations and reticles to facilitate target engagement.

The Bradley fire support vehicle's configuration as a Bradley will render it virtually indistinguishable from the Bradleys of the maneuver force it is supporting, will afford observers the mobility to keep pace with the Bradley-Abrams combined arms team, and will ensure that the combined arms team retains its ability to move fast, strike hard, and dominate the modern battlefield. *(This article was prepared by the staff of the Dismounted Battlespace Battle Lab at Fort Benning.)*

The Q-36 Weapons Locating Radar

A Primer for Brigade Commanders and Staffs

LIEUTENANT COLONEL WILLIAM A. SWEET

During the early phases of contingency operations, units can expect to live off the tailgates of C-130 aircraft operating on a forward landing strip. Knowing the effect the enemy's indirect fire can have on this lifeline, these units need a system that will prevent enemy mortars and artillery from interdicting their lines of communication.

Imagine a system that could acquire enemy mortars and artillery firing to an accuracy of 100 meters. This system would report this information to the brigade tactical operations center (TOC) before those rounds hit. If the commander desired, it could transmit fire commands to the brigade's direct support howitzers before the rounds hit. It

would shut down the enemy's indirect fires, allowing safer conditions in which to conduct logistical and tactical operations.

Fortunately, this system is already in infantry brigades, and the opposing force (OPFOR) at the Joint Readiness Training Center (JRTC) has already determined it to be a high payoff target.

The AN/TPQ-36 weapons locating radar—fielded during the early 1980s—is organic to the direct support artillery battalions of the Army's light, air assault, and airborne divisions. During early JRTC rotations, however, some combined arms commanders left this radar system at their home stations. As they became more aware of its capabili-

ties, most of them began deploying it into the landing strip within the first ten chalks. To make the most of the Q-36 weapons locating radar, brigade commanders and staff officers need to understand its capabilities and limitations.

Q-36 Radar Capabilities

The Q-36 can acquire mortar, artillery, and rocket fires out to a range of 24 kilometers. The core of the system consists of three components—an antenna, an operations control group (in a common shelter), and a generator.

In the original configuration, the Q-36 is mounted on two five-ton trucks with trailers. The radar section also has

a reconnaissance vehicle. The Block II system now being fielded mounts the entire system on high-mobility multi-purpose wheeled vehicles (HMMWVs); a working radar section can now be deployed with two HMMWVs and two trailers.

Although the Q-36 is capable of locating indirect fire systems out to a range of 24 kilometers, the probability of acquiring these targets decreases beyond 12 kilometers. Also a function of the range is the accuracy of acquisition. The error is one percent of the range to the target for low-angle (artillery) fires and less for high-angle (mortar) fires. Therefore, the circular error probable, or CEP, at 10 kilometers is 100 meters—accurate enough for a fire-for-effect mission and certainly close enough for establishing enemy dispersion patterns.

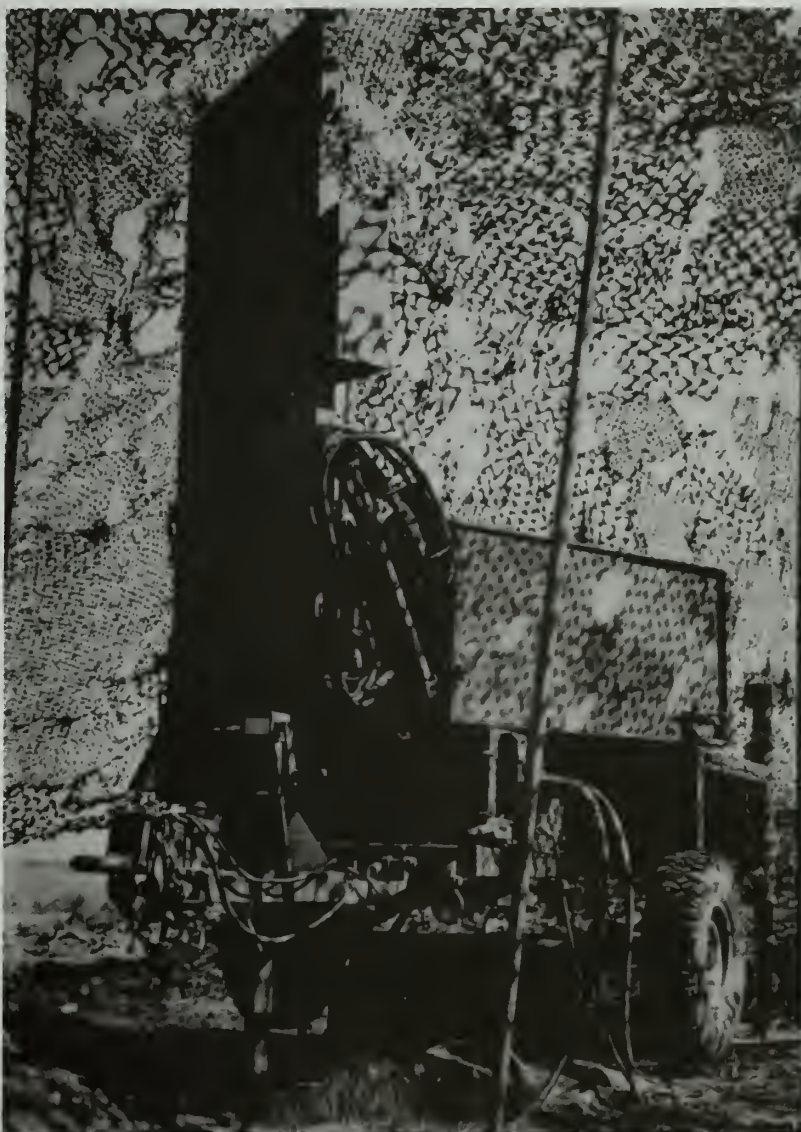
The system communicates digitally with the artillery battalion TOC through the LTACFIRE/TACFIRE systems. The radar is capable of tracking nine rounds in the air at the same time. Although this can be a limitation in combat situations, it is probably not a factor in military operations other than war.

A significant idiosyncrasy of the Q-36 software is its inability to acquire hostile fire when the projectile is traveling away from the antenna (Figure 1). This may not be a limitation on the linear battlefield, but it can be important in military operations other than war and warrants serious consideration when positioning the radar.

Staff Considerations

For those of you who are brigade commanders and staff officers, I offer the following as a primer on the factors you should carefully consider in each staff area when employing the Q-36.

Operations Officer: Obviously, the decision on where to place the radar in the airflow must be based on an analysis of METT-T (mission, enemy, terrain, troops, and time). Assuming the enemy has mortars or other indirect fire systems, you might ask where on the brigade high payoff target (HPT) list the combined arms commander has placed indirect fire systems. The answer may



The AN/TPQ-36 weapons locating radar is organic to the direct support artillery battalions of light, air assault, and airborne division.



Figure 1. Trajectory of round is away from the radar, and acquisition is not reported.

determine where the radar is placed in the airflow.

Knowing that a few well-placed enemy mortar rounds on the landing strip could halt the airflow usually makes this decision obvious, but

deploying the radar is not cheap. Most divisions in which the Block II program has not yet been fielded have transferred their radars to HMMWVs. In these cases, a working radar section can be deployed in one C-130 aircraft, or the

entire section in two C-130s. But in the divisions that have not converted to HMMWVs, the radar shelter is still on a five-ton truck, and a working system will not fit on a single C-141. The system with the shelter on the back of a truck is not deployable by C-141, so you have to plan for a 463L pallet and tie-down equipment, and be able to load the shelter back on the truck once the plane lands.

It is also advisable to include an artillery survey vehicle in the early air-flow. An orientation error of one degree will result in an error of 178 meters when reporting acquisitions at 10 kilometers. Satellite-based survey methods, such as the global positioning system (GPS), simply do not provide data that has the precision or accuracy that artillery acquisition and firing elements require. If you have a Block II system, it may include a self-locating survey device such as the modular azimuth positioning system (MAPS). If you have the older system, you will also need to deploy a survey vehicle with a position and azimuth determining system (PADS) from the artillery battalion.

When planning the initial position for the radar, consider its technical limitations and security. This usually leaves you with four possible positions—in the brigade support area (BSA); with a firing battery; with the artillery battalion TOC; or alone. Because of the risk of losing the radar, most units at the JRTC choose one of the first three options. But the technical requirements of the system

(range, communications, screening crest) can drive you to position it outside the perimeters of these other units, thereby aggravating the security problem.

If the commander has determined that the Q-36 radar is essential to his mission, you need to consider security for it. The entire radar section consists of eight soldiers (six in the Block II configuration), led by a warrant officer. The section does not have the resources to conduct its mission and also its own 24-hour security. If the radar is already high on the enemy's HPT list, the eight-man section cannot hope to repel a determined attack.

A principal positioning consideration is the screening crest, or mask angle, from the radar position (the angle from the horizontal to the highest point on the horizon). The radar operator programs the Q-36 to look over the horizon, whether that is a hill or trees to his front. If the screening crest is too high, the entire trajectory of the rounds fired from a weapon will be below the radar's beam and remain undetected (Figure 2). Even if a round is detected, the radar will track it for a shorter portion of its trajectory, which will result in a larger error in locating the origin of the fires. Valleys and heavily forested areas are not suitable for the Q-36. If you force the section into an unsuitable area, your intelligence collection plan will suffer.

Force protection and fratricide are other key planning considerations. If the commander has decided to engage the enemy's indirect fire systems with

artillery, you can literally have firing data on the howitzers before the impact of the enemy rounds. But the radar can't distinguish an 82mm round from an 81mm round from a 152mm round. They all look the same. The radar can establish an area (called a censor zone) around a known mortar location and then ignore rounds fired from that location, but it must be given the proper information. It is therefore critical that the battalions track and report the positions of their 60mm mortars. You need to work through the FSO to ensure that friendly mortars are protected from radar acquisition.

Engaging enemy mortars with artillery may not be the best solution. Can you clear the targets for engagement with indirect fires faster than the enemy can displace his mortars? How well is the brigade staff trained in its clearance-of-fire battle drill? If you engage enemy mortars with artillery, is there a possibility of collateral damage and civilian casualties? These are issues you need to discuss during the decision phase of daily targeting meetings. With a few acquisitions, the S-2 can probably give you a templated position for the enemy's mortar cache. If you can capture or destroy his ammunition, you will have shut him down as surely as if you had engaged him with indirect fires.

The radar must be properly oriented to support the main effort. This is both a range and an orientation issue. The radar's ability to acquire targets decreases beyond 12 kilometers. A commander

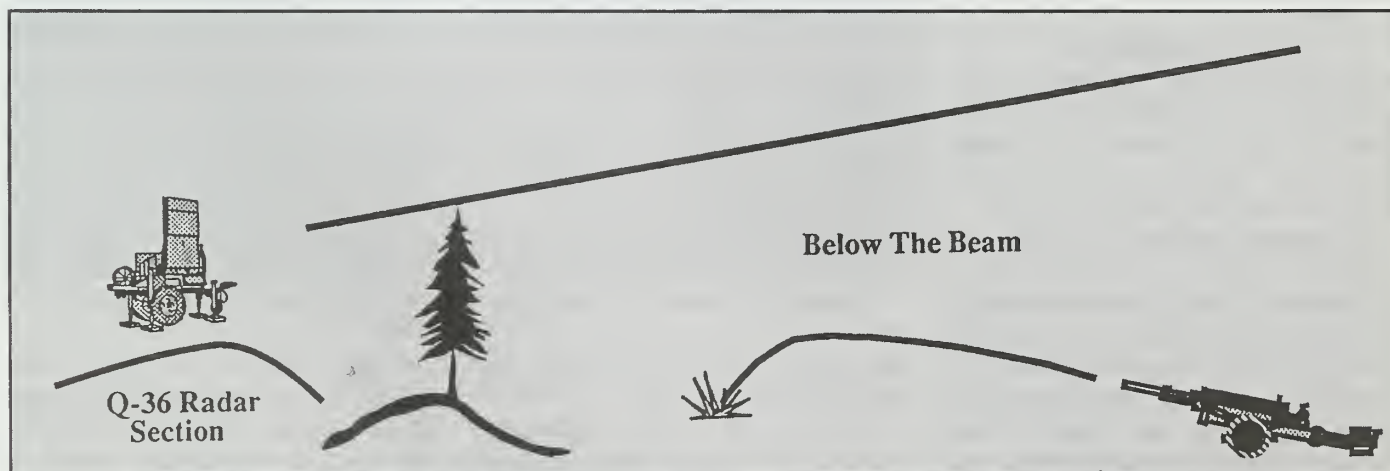


Figure 2. Screening crest is too high, and trajectory is below the radar beam.

may also need to accurately acquire targets that friendly weapons cannot engage. At any one time, the radar can scan only in a 90-degree arc. At the JRTC, we have seen radars oriented on the rear battle during a deliberate attack because planners failed to prioritize all their acquisition assets during a critical battle.

Recognizing that the Q-36 radar is on the top of the OPFOR commander's HPT list, many units try a deception with a wooden replica of the radar. Such deception plans can work, but they're not without cost. Building a replica and planting it somewhere in the brigade sector does not make a deception plan. If you want to play a shell game with the replica and the actual radar, make it a believable deception. Consider all the resources you'll need to replicate the signature of an operational radar—trucks, camouflage nets, soldiers, generators. For example, what are you doing with your loudspeaker teams? Where will the OPFOR expect to find the radar? Wherever you choose to place the replica, remember that it will draw the attention of the OPFOR. If you believe the payoff is worth the resources invested, try it. But the OPFOR soldiers are not easily fooled; they know all the component parts that make up a radar.

Intelligence Officer: Although the Q-36 radar can look at a 360-degree arc, it takes time to rotate the antenna through the four 90-degree sectors, so you need to focus its sector of scan as part of the collection plan. Where does the radar need to look? Is it within range of the area you want it to search? Or do you need to move it? Talk to the FSO and the artillery battalion S-3. If there is more than one area, and the radar cannot cover them all with a 90-degree sector from its position, the commander must specify how long he wants it to look in

each area. Address these issues during the detect phase of your daily targeting meetings.

The field artillery battalion S-2 controls the radar cueing, so he must know where the enemy mortars have been templated. Is he using the radar to confirm or deny your templates? Has he received an update since the initial situational template was published? You need to talk to him daily.

When properly programmed, the LTACFIRE will report all acquisitions to the brigade FSO through a TACFIRE format. This format will give you the origin of the fires and the predicted impact point. Have you received and plotted all the radar acquisitions on your map, and what does this data tell you? This is information that the commander needs in developing his vision of his battle space.

Logistics Officers: Because the Q-36 radar is unique in the brigade, returning it to operational status when it breaks is all the more difficult. Of the 300 lines of prescribed load listing (PLL) items the artillery battalion carries, some 93 of them are the essential repair parts supply list (ERPSL) for the radar. Most of these are circuit cards that cost thousands of dollars each. Did the artillery battalion bring the ERPSL as part of its PLL? How many of these lines are at zero balance? Does the forward support battalion (FSB) have any lines on its authorized stockage list (ASL) to support the radar? If not, does the main support battalion (MSB) have them, and did the brigade deploy with them?

Is there a radar repairman (MOS 39CX5) in the FSB? If he is found only in the MSB, did your brigade deploy with him? If the brigade commander is interested in keeping the Q-36 radar operational, these are questions you

should be prepared to answer before the radar goes down.

The commander should be briefed twice a day concerning the operational status of crew-served weapons and other key weapon systems in the brigade; the operational status of the radar should be part of this briefing. If the radar is key to his plan, the commander needs to know its status.

Personnel Officer: Only seven radar operators (MOS 13R) are authorized in the brigade, and one of them is a warrant officer (MOS 131A). The section also contains a generator repairman (MOS 52D). Does your brigade have the authorized number of soldiers? Does one of the radar operators have the X5 additional skill identifier that allows him to perform maintenance on the radar? When you have a low-density MOS for such a critical system, you need to know the status of each of these soldiers.

Although the Q-36 is organic to the direct support artillery battalion, it is a brigade asset. Employing it requires staff coordination at brigade level. With the Q-36, the brigade can shut down the enemy's indirect fires. Brigade commanders have discovered the importance of the Q-36 radar to their brigades. Brigade staff officers also need to know the characteristics of the Q-36 radar so they can ensure that it is available when and where the commander needs it.

Lieutenant Colonel William A. Sweet, a Field Artillery officer, is senior fire support analyst at the JRTC. He previously served in various fire support positions, including brigade fire support officer, in the 3d, 7th, and 8th Infantry Divisions. He is a 1977 ROTC graduate of the Massachusetts Institute of Technology, from which he also holds a master's degree.



FIFTY YEARS AGO IN WORLD WAR II MAY-JUNE 1944

By the spring of 1944, military reverses in the Pacific, in Italy, and across the breadth of the Soviet Union had become a portent of the fate that was to befall the Axis in the coming year. Irreplaceable losses in men and materiel made it impossible to resist for long the ring that was inexorably closing in on Germany and Japan and their dwindling number of allies. The unraveling of codes that both the German and Japanese relied upon enabled Allied intelligence agencies to anticipate enemy operations and to accurately assess the effectiveness of our own military operations. The culmination of Allied efforts in the late spring of 1944 was the landing of more than 150,000 troops at Normandy, on the coast of France. The second front long awaited by the Russians had been opened.

These and other highlights of World War II are drawn from Bud Hannings' excellent book, *A Portrait of the Stars and Stripes, Volume II*, available for \$50.00 from Seniram Publishing, Inc., P.O. Box 432, Glenside, PA 19038.

- 1 May *The Allies in Italy finalize plans for the next offensive to take Rome. A meeting is held at Caserta to work out the details of a massive assault against Cassino, followed by a breakout at Anzio.*

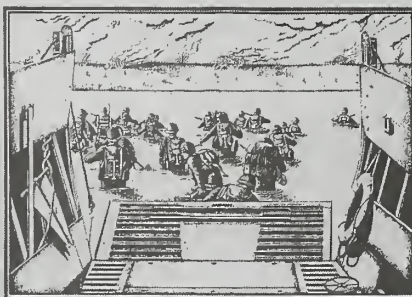
- 9 May *The Soviet Red Army retakes Sevastopol. In the China-Burma-India theater, Chinese troops, assisted by Merrill's Marauders, push the Japanese from Ritpong.*

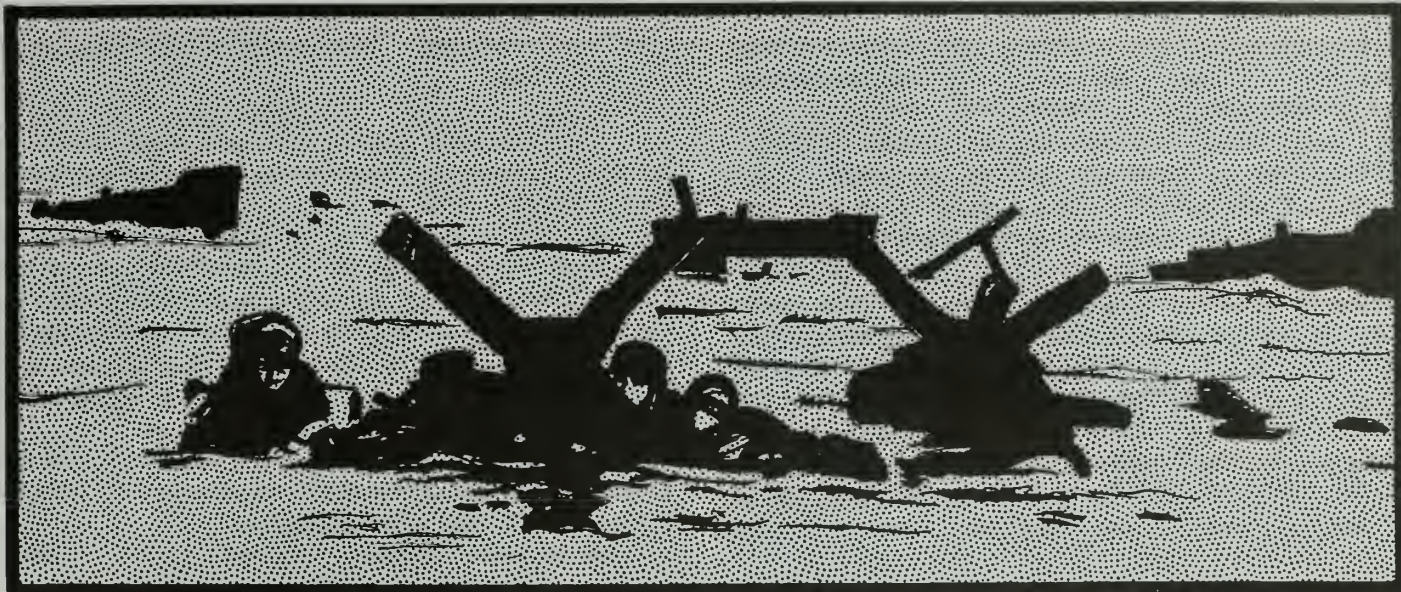
- 11 May *The Allies mount the final offensive to crush resistance on the Gustav Line and take Cassino and Rome. During the attack, First Lieutenant Robert T. Waugh, 339th Infantry, 85th Division, advances against an enemy-held hill near Tremensuoli. The platoon opens up with cover fire as Waugh assaults and destroys six enemy bunkers, capturing or killing all defenders. He is killed later at Itri, Italy, and is posthumously awarded the Medal of Honor.*

- 16 May *In the U.S. Fifth Army area, the German 94th Division is in full retreat, with the 85th and 88th U.S. Divisions in pursuit.*

- 3 June *During the Battle for Rome, an American patrol comes under fire from the Germans near Vaumont. Private Herbert F. Christian draws fire from 60 riflemen, three machineguns, and three tanks. His left leg is shot off, but he continues to stagger toward the German position, firing the last round from his sub-machinegun. Enemy fire kills him, but his sacrifice allows his squad to escape. He is posthumously awarded the Medal of Honor.*

- 6 June *More than 5,000 ships carry more than 150,000 men ashore at Normandy, while three Allied airborne divisions land behind the enemy-held coast during the pre-dawn hours, beginning Operation OVERLORD.*





INFANTRYMEN IN ACTION

D-DAY LANDING, 6 JUNE 1944

EDITOR'S NOTE: This article is an account of the actions of the 1st Assault Section of Company E, 16th Infantry, 1st Infantry Division on 6 June 1944, taken from an interview found in the National Archives. The text of that interview, presented here with only minor editing, is introduced by Major General Albert H. Smith, Jr., U.S. Army Retired, who commanded Company L of the same regiment in the D-Day assault. General Smith also served with the 1st Infantry Division in Vietnam and was Honorary Colonel of the 16th Infantry Regiment from December 1983 until May 1990.

INTRODUCTION

Until the United States entered World War II in December 1941, our Allies had little cause for optimism. After Germany's invasions of Norway and Denmark in April 1940, its Blitzkrieg across the Netherlands, Belgium, Luxembourg, and France in May 1940, and its invasion of the Soviet Union in June 1941, most of Europe and North Africa was either in Axis hands or the scene of bitter fighting. The tide of the German advance into the Soviet Union would not be turned for another 18 months, and then only in counteroffensives that were to cost millions of military and civilian casualties.

The Japanese attack on Pearl Harbor on 7 December 1941—intended to cripple our Pacific Fleet and undermine the American will to engage in war with Japan—produced two results the Japanese had not anticipated: It strengthened U.S. resolve and gave hope to her Allies that the nation's entire industrial and military might would soon be turned against the Axis powers. A joint German-Italian declaration of war against the United States on 11 December 1941 further

clarified the course the U.S. and her Allies would follow for the next four years. President Franklin Roosevelt and Prime Minister Winston Churchill dedicated their combined resources to defeating first the Germans in Europe, and then the Japanese in Asia.

The first step toward achieving the ultimate goal of victory was to concentrate American men, women, and materiel in Great Britain, and the U.S. 1st Infantry Division was one of the first units sent overseas.

For the Big Red One, World War II began on board the liner *Queen Mary*—converted into a troop transport—as she sailed from the port of New York on 2 August 1942 bound for the British Isles. She sailed alone, relying on her speed of more than 30 knots for the ability to evade the U-boats that haunted the shipping lanes of the North Atlantic. On board were 16,000 U.S. soldiers and their individual equipment.

After safely arriving in England and completing a year of arduous training there and in Scotland—and after a 2,200-mile sea voyage—the regiments of the division seized Oran, Algeria, in an amphibious assault launched on 8 November 1942. That three-day operation was followed by successful campaigns in Tunisia and Sicily. As a result, the 1st Infantry Division that sailed back to England in late October 1943 was now a battle-hardened fighting force that had proved itself against some of the best units of the Wehrmacht.

By the spring of 1944, plans had been made and orders issued for the Normandy invasion (Operation OVERLORD). Major General C.R. Huebner—Commanding General of the 1st Infantry Division—was chosen to command the 34,000-man task force aimed at Omaha Beach (Map 1). The 16th Infantry Regiment, one of two regiments designated to lead

the assault, would land on the left (north) end of Omaha Beach with two battalions abreast at H-Hour (0630)—2d Battalion on the right and 3d Battalion on the left (Map 2). On the extreme right flank of the 2d Battalion was Company E, 16th Infantry, commanded by Captain Ed Wozenki.

This brings us to the focus of this article:

On 1 May 1944, Second Lieutenant John Spaulding, Technical Sergeant Philip Streczyk, and the 1st Assault Section of Company E, 2d Battalion, 16th Infantry Regiment, moved into their holding area, an austere tent encampment several miles inland from Weymouth, on the south coast of England. A month later, they were aboard an attack transport—the USS *Henrico*, APA45—with its landing craft (LCVPs) preparing for the cross-channel assault.

The following is Lieutenant Spaulding's recollection of the events on 6 June 1944, as recorded in a February 1945 interview in Belgium with noted historian Forrest C. Pogue (then a master sergeant in V Corps), who even today recalls this as the best of his many World War II interviews with combat veterans.

Lieutenant Spaulding's account is particularly relevant for today's soldiers and junior leaders, because it is a classic story of infantrymen in action, a detailed description of the wondrous things a junior officer, his noncommissioned officers, and his soldiers accomplished 50 years ago. In all the accounts of heroic deeds performed on D-Day, none has surpassed that of the 1st Assault Section, Company E, 2d

Battalion, 16th Infantry. Here is that story, in Lieutenant Spaulding's own words:

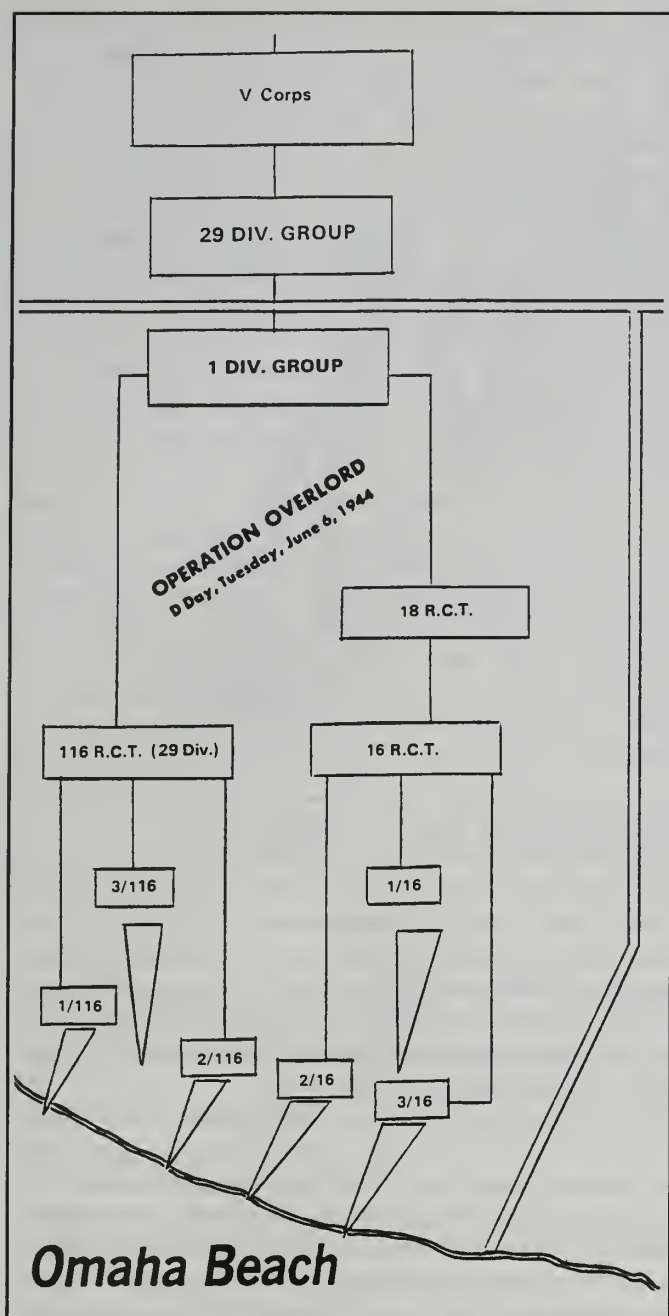
We loaded into LCVPs from larger ships at 0300, 6 June 1944. The companies were divided into sections, and each LCVP had 32 men—including a medic—plus two Navy men. I was the leader of the 1st Section of Company E, and we were scheduled to go in on the first wave. My assistant section leader was Technical Sergeant Philip Streczyk. (Streczyk, later wounded in the Huertgen Forest action, was the best soldier I have ever seen. He came into the Army as a selectee and worked his way up to platoon sergeant. He was in on the landings at Oran and in Sicily. If we had more men like him, the war would soon be over.)

We unloaded into LCVPs in a very rough sea. It took us much longer to load than it had during the practice landings because of the rough water. After boarding the LCVPs, we went an undetermined distance to a rendezvous point. Here the Navy crew took us around and around, getting us soaked to the skin. Many of the men got seasick immediately, and others got sick as we moved towards shore.

About 0400 our boats lined up in a V-formation and headed in. As we went towards shore we could see the outlines of other boats around us, and overhead we could hear a few planes. Between 0545 and 0600 we saw the first flashes from the shore. We didn't know whether the flashes were from our planes bombing, as we had been told to expect, or from German artillery. We caught sight of the shore about 0615.



Map 1



Map 2

We also saw a few of our fighter planes. About 0630 the rocket ships began to fire, but most of their rockets hit in the water.

In the meantime, the Navy had been firing, and the dust from the debris—combined with the early morning mist—made it difficult to see the coast.

As we came in, there was considerable noise from the shore and the sea. Enroute, we passed several yellow rubber boats; they had personnel in them, but we didn't know who they were. They turned out to be the crews of amphibious tanks that had foundered.

About 800 to 1,000 yards out, we began receiving ineffective machinegun fire from the shore. As we neared the shore, we reached the line of departure; here the odd-numbered boats swung out abreast on one side, while the even-num-

bered boats went to the other side. We approached the beach in this formation.

Our instructions were to land just to the right of a house identified by location and coordinates, which was to be the left boundary of my position. We were to cross an antitank ditch near the point designated E-1 (Map 3) and scale the sea-wall. Once we had done this, we were to send patrols into St. Laurent, to link up with E Company of the 2d Battalion, 116th Infantry, which was supposed to land on our right flank, and then push on to the high ground behind the town. According to plan, the air force was to have destroyed the beach defenses by this time, enabling us to land without any great opposition.

We hit the line of departure at around 0630, someone gave the signal, and we swung into line. When we were about 200 yards offshore the LCVP halted, and a Navy crewman yelled for us to drop the ramp. Staff Sergeant Fred A. Bisco and I kicked the ramp down. Meanwhile, the other Navy crewman on the LCVP had mounted a machinegun on the rear of the craft and had started to return fire. By now we were beginning to receive not only machinegun fire but mortar and artillery fire as well. Some of the men said they were German 88mm rounds, but during my entire fight in Europe I have only seen three 88mm bursts.

We had come in at low tide and the obstacles were visible, sticking out of the water, and we could see teller mines on many of them. No path had been cleared through the obstacles, so we followed a zigzag path in to the beach. It is difficult to know whether the Navy could have taken the boats in any farther, since it is possible that they would have become stuck on the sand bars.

Because we were carrying so much equipment, and because I was afraid we were being landed in deep water, I told the men not to jump out until I had tested the water. I jumped out of the boat slightly to the left of the ramp, into water about waist deep. By then it was about 0645. Then the men began to follow me. We headed for shore, and the small arms fire became noticeable. We saw other boats to our left, but none to our right. We were the right front unit of the 1st Infantry Division. We had seen some tanks coming in, but we didn't know which unit they belonged to.

As we left the LCVP, we spread out in a V-formation about 50 yards across. The water soon became deeper, and we began to swim when it was over our heads. There was a strong undercurrent carrying us to the left. I pulled the valve on my lifebelt; fortunately it inflated and saved me, although I lost my carbine. We lost none of our men, but only because they helped each other, or because they got rid of their equipment.

About this time, Sergeant Streczyk and Private George Bowen—the medic—were also in the water, carrying an 18-foot ladder, intended to assist in crossing the anti-tank ditch or any other obstacle. They were struggling with it just as I was having the worst time trying to stay afloat. As the ladder came by I grabbed it. Streczyk yelled, "Lieutenant, we don't need any help!" not realizing that I was trying to get help, not give it! I told them to leave the ladder, so we aban-

done it in the water. By now, we could touch bottom and I had swallowed a lot of water. We pulled out Sergeant Edwin Piasecki, who was about to drown. Private First Class (PFC) Vincent DiGaetano—who was carrying a 72-pound flamethrower—yelled “I’m drowning; what do you want me to do with this flamethrower?” Streczyk told him to drop it, so he did. In addition to our flamethrower and many personal weapons, we lost our mortar, most of the mortar ammunition, one of our two bazookas, and much of the bazooka ammunition. However, those men who made it to shore with their weapons were able to fire them as soon as they hit the beach, proving that the M-1 Garand is an excellent weapon.

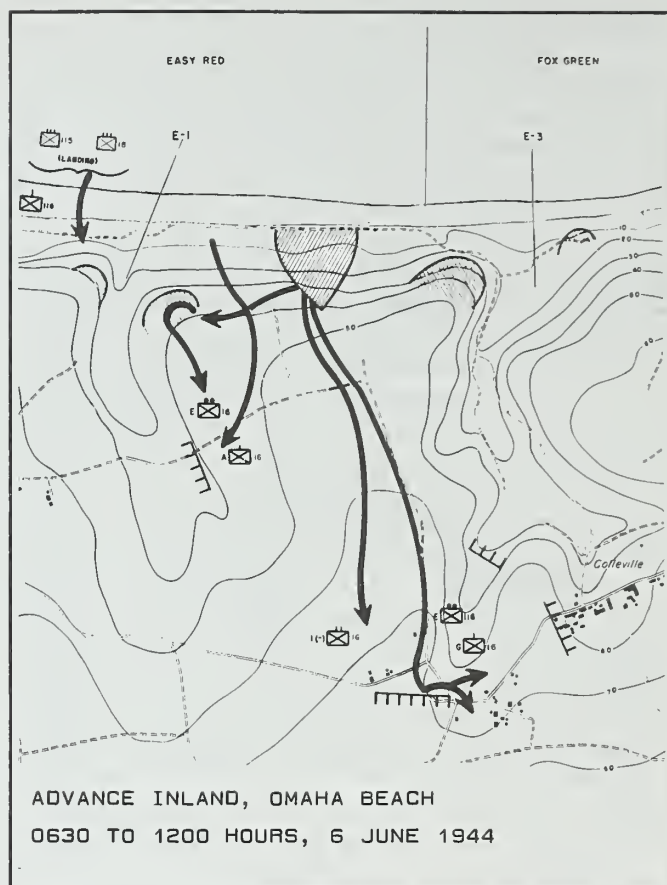
As we were coming in, I looked at the terrain and saw a house that looked like the one we were supposed to hit, and said “Damn, the Navy has hit it right on the nose!” I later found out that we had actually landed near another house 1,500 yards to the east of our intended landing site. (One reason the Navy crew failed to hit the right part of the beach was that the dust created by the Naval gunfire—combined with the early morning mist—made it difficult to see the coast.)

We first ran into wire down near the water’s edge; Staff Sergeant Curtis Colwell blew a hole in the wire with a bangalore torpedo, and we picked our way through. I personally didn’t see the gap he had blown, because I was still dazed from the landing. I didn’t see any mines except antitank mines on the beach. Private William C. Roper, a rifleman, became our first casualty when he was hit in the foot by small arms fire just as he reached the beach. Then, just after we got ashore, one of my two BAR (Browning automatic rifle) men was hit; next wounded was PFC Virgil Tilley, struck in the right shoulder by a shell fragment. By this time, I noticed a number of my men on the beach, all standing up and moving across the sand. They were too waterlogged to run, but they went as fast as they could; it looked as if they were walking in the face of a really strong wind. We moved straight inland across the shale beach, toward the house we had spotted.

We first stopped at a demolished building with brush around it. We were forced to halt there by a minefield at the first slope off the beach. My section was spread out; they had deployed the minute they hit the beach, according to instructions. They had been told to get off the beach as quickly as possible and had walked on across because nobody had stopped them.

As we were crossing the beach, my runner—PFC Bruce S. Buck—approached me, and I tried to contact E Company using my 536 radio; I extended the antenna and was trying to transmit when I saw that the mouthpiece had been shot away. Instead of discarding the useless radio, I folded the antenna and slung the 536 over my shoulder, proof that the habits you learn in training can often stay with you even when you are scared.

By the time we reached the house, we were receiving heavy small arms fire; we organized as skirmishers and were returning what fire we could. Sergeant Streczyk and PFC Richard J. Gallagher advanced to investigate the minefield we had discovered to our front. They decided we couldn’t cross the obstacle, and set out to find a bypass through the



Map 3

thick brush. Meanwhile, the rest of us were taking cover behind a low wall of the house, while a German machinegun kept us under fire. PFC Lewis J. Ramundo was killed here—the only man in my section killed on the beach. One other man was killed later in the day.

On our left, we had bypassed a pillbox, from which machinegun fire was mowing down F Company people several hundred yards away. There was nothing we could do to help them, since we still could see no one on our right flank, and there was no one to help us on our left. We still didn’t know what had become of the rest of E Company. Behind us, boats in the water were in flames, and I saw a tank come ashore around 0745. After a couple of looks behind us, we decided not to look back anymore.

At this point, it was still early morning, and in spite of heavy German rifle and machinegun fire, we had sustained few casualties. We returned fire, but without apparent effect. We were nearly at the top of the first hill off the beach when PFC Gallagher returned and said to follow him up a defile about 400 yards to the right of the pillbox that was impeding F Company’s advance. I called my men forward, and we cautiously moved along the defile, keeping our eyes open for the little box mines the Germans had planted throughout the area. We made it through without mishap, but a few hours later H Company sustained several casualties while moving through the same area. The Lord was with us on that one.

A machinegun above us took us under fire, and Sergeant Blades attempted to knock it out with a bazooka; he missed,

and was shot in the left arm almost immediately. PFC Curley, a rifleman, was the next man hit. When PFC Tilley was wounded shortly after landing, Staff Sergeant Phelps had picked up his BAR and now attempted to engage the machinegun; he was soon hit in both legs. By now, nearly all of my section had moved up, and when we rushed the gun the lone crewman threw up his hands and yelled "Kamerad!" We could have easily killed him, but since we needed prisoners for interrogation I ordered the men not to shoot him. He said that he was Polish, that there were 16 Germans in the area, and that they had been alerted that morning. He added that their orders were to hold the beach. They had taken a vote on whether to fight and had decided against it, but the German noncommissioned officers had forced them to remain in their positions. He also said that there were 16 Germans in the trench to the rear of his machinegun, and that he had not fired on any Americans, although I had seen him hit three.

I left Sergeant Blades—who had been wounded in the assault—in charge of the prisoner, guarding him with a trench knife. We moved our wounded into a defile and Private Bowen, the medic, gave them First Aid. He covered his whole section of the beach that day; no man waited more than five minutes for First Aid, and his actions did a lot to help morale. He later received the Distinguished Service Cross for his actions on D-Day.

Meanwhile, Sergeant Clarence Colson, who had picked up a BAR on the beach, moved along the crest of the hill, firing from the hip. He engaged the machinegun on our right, firing so rapidly that his ammunition carrier had difficulty keeping him supplied with ammunition. We were on top of the hill by 0900; advancing cautiously. We were the first platoon of the 16th Infantry to hit the top. By now my section was down to 21 or 22 men. We had spent more time in the rubble of the house at the foot of the hill than anywhere else, and had also lost time in the capture and interrogation of the prisoner.

At about 0800, Lieutenant Blue of G Company came up and contacted me; he had followed our trail after his company had landed in the second wave behind us. A few minutes later, the commander of G Company—Captain Dawson—came along and asked me if I knew where E Company was. Since I still had seen no one on our right, I told him I didn't know. He said that E Company was 500 yards to my right, but he was thinking in terms of where they were supposed to land; as it turned out, they were actually 500 to 800 yards to our left instead. I later found out that E Company had lost 121 men. Captain Dawson said that he was going into Colleville, and told us to go in to the right. He had about two sections of men with him at that time.

I went over and talked to Lieutenant Blue about the information we had gotten from the prisoner, and asked him to give us some support where the 16 Germans were supposed to be. Moving in that direction, we soon ran into a wooded area and discovered a beautifully camouflaged trench that ran along in a zigzag fashion. We were afraid to go into the trench, but instead moved along the top of it, spraying it with small arms fire. We used bullets instead of grenades because

we had very few grenades and thought that bullets would be more effective anyway. We did not fix bayonets at any time during the attack. We turned to the right and hit a wooded area; since we drew no fire from there, we yelled to Lieutenant Blue to move out, and he started for Colleville. We moved toward St. Laurent; G Company went on to Colleville; and H Company arrived and went into Colleville under Lieutenant Shelby.

Our men were spread out over an area 100 to 500 yards wide, and Streczyk and Gallagher volunteered to scout the area to our front. They located a machinegunner flanked by two riflemen, and when Streczyk shot the gunner, the riflemen surrendered. Both of the prisoners refused to give any information. We continued to the west with them in tow. Meeting no resistance, we were soon in hedgerows and orchard country. Watching our flanks and front, we scoured the wooded area, sending one sergeant and three or four men to check out suspicious areas. Although we usually set up an automatic weapon to cover such areas, we did not have any machineguns at this time. We crossed two minefields, one of which had a path through it that looked like it had been in use for a long time. We first saw the *Achtung—Minen!* sign after we got through this minefield; we still had an angel on our shoulder.

We now found a construction shack near the strongpoint overlooking the E-1 draw. If you examine the defense overlay, you will find an almost exact duplicate of what we saw. Sergeant Kenneth Peterson fired his bazooka into the shack, but no one came out. We were about to move on when I spied a piece of stovepipe sticking out of the ground about 70 yards away. By now we were once again receiving small arms fire, so I formed my section into a semicircular defensive position, and Sergeant Streczyk and I went forward to investigate. We found an underground dugout and an 81mm mortar emplacement, a position for an antitank gun, and construction for a pillbox. All this overlooked the E-1 draw (as shown on the map). The 81mm was not manned, but it had beautiful range cards and lots of ammunition. The dugout was constructed of cement and had radios, excellent sleeping facilities, and guard dogs.

We started to drop a grenade into the ventilator pipe, but Streczyk said "Hold on a minute," and fired three shots into the dugout. He then yelled in Polish and German—he had interrogated the prisoner earlier—for the occupants to come out; four unarmed men came out, carrying two or three wounded. I yelled for Colson to bring a squad forward just as we began receiving small arms fire from our right flank, off to the west. I yelled for Piasecki and Sakowski to move forward to the edge of the draw, and a firefight ensued. By then, it was about 1000, and the Navy began placing time fire into the draw. In the course of the firefight, Piasecki deployed six or seven men, shot several Germans, and chased the rest into the draw, where the naval gunfire caught them.

When Colson came over I started down the line of communications trenches leading to the cliff over the beach. We were now behind the Germans, so we routed four out of a hole and got 13 in the trenches. The trenches had teller

nines, hundreds of grenades, and numerous machineguns, and they were firing when we came up. We turned the prisoners over to Streczyk. We had had a short fight with the 13 men; they threw three grenades at us, but didn't hit anyone. We found one dead man in the trenches but don't know if we killed him. If we did, he was the only German we killed. Several of us went on to check the trenches.

At this point, I did a foolish thing. I had picked up a German rifle after losing my carbine in the water, but found I didn't know how to use it too well. When I started to check on the trenches, I traded the German rifle for a soldier's carbine but failed to check it. I soon ran into a German and pulled the trigger, but the safety was on. I reached for the safety catch and hit the clip release instead, so my clip hit the ground. I ran about 50 yards in nothing flat. Fortunately, Sergeant Peterson had me covered, and the German put up his hands. That business of not checking guns is certainly not habit forming.

We next took out an AT gun near the edge of the draw. There was little resistance. We now had the prisoners back near the dugout. We had split the section into three units. From the draw to the right, we got a little ineffective machinegun fire at this time. We tried to use the German 81mm mortar, but no one could operate it. For the first time, I saw people across the draw to the right (west). I supposed that they were from the 116th. They seemed to be pinned down.

About this time, two stragglers from the 116th Infantry came up. I didn't ask what company they were from but just took them along. We went back and checked trenches since we were afraid of infiltration by the Germans. In the meantime I sent the 17 to 19 German prisoners back with two men the way we had come. I told the men to turn the prisoners over to anyone who would take them and to ask about our company.

At this point I saw Lieutenant Hutch of Company E (second section which had been directly to my left in the boats) coming up. I pointed out a minefield to him, and he told me that there was a sniper near me. We had sniper fire every few feet now and were getting pretty jittery. The Navy's time fire was getting very close, too, and we sent off our last yellow smoke grenade to let them know we were Americans.

About 1045 Captain Wozenski of Company E came up from the left. He had come along practically the same route we had used. I was very happy to see him. We had orders to contact Major Washington, 2d Battalion executive officer, just outside Colleville. Our objective was changed; there were to be no patrols into Trevieres that afternoon as we had originally been told there would be. We never crossed the E-1 draw. Instead, we went along the trail toward Colleville. We were to swing into the fields to the right of Colleville. Lieutenant Hutch and I had about 30 men; as a first lieutenant, he was in charge. Lieutenant James McGourty had also come up with Captain Wozenski. Three of our section leaders had been killed on the beach; Hutch, McGourty, and I were here together.

We ran into Major Washington; he was in a ditch outside

town. Earlier, Captain Dawson had come up to Colleville, his original objective. G Company was already in and around the town. We got some small-arms fire in this area, but no one was hit. Lieutenant Hutch and I contacted Major Washington about 1300. He told us we were to go to the right of Colleville and guard the right flank of the town. We went out and were surrounded in about 40 minutes. Lieutenant Knuckus of G Company, with about 14 men, came up and said he had the right flank, so we reinforced him. Altogether, Hutch, Knuckus, and I had about 45 men.

We had set up our defensive position to the west of Colleville. We selected a position where no digging was necessary, often using drainage ditches. We were now in orchards and hedgerows. We moved cautiously, because we didn't know where anybody was. About 1500 we got German fire. DiGaetano was hit by shrapnel fire, and Sergeant Bisco was killed by rifle fire. Only one round of artillery came in (we thought it was from one of our ships). It exploded about 300 yards from us with an orange and yellow flash.

As we looked back toward the beach, we saw several squads of Germans coming toward us, and we had no contact with the battalion. Just as a Company G runner started over to us and got to the edge of our defenses, they opened fire on him. After he fell, they fired at least 100 rounds of machinegun ammunition into him. It was terrible. But we do the same thing when we want to stop a runner from taking information. Of course, we didn't find out what he was coming to tell us. We fired until we were low on ammunition that afternoon. I had six rounds of carbine ammunition left—some of the soldiers were down to their last clip—and we were still surrounded. We called a meeting of Lieutenants Knuckus and Hutch, Technical Sergeants Ellis and Streczyk, and me. About 1700 we decided to fight our way back to the battalion. We sent word for the men to come to us in the ditch where we were, several hundred yards south and west of Colleville.

About 1900 or 2000 we set up automatic weapons to cover us as we crawled down the ditch back toward Colleville. Lieutenant Hutch went in front. We got back to battalion and ran into Company C of the 16th Infantry on the way to reinforce us. We didn't know where we were. We found Major Washington in a little gully at the west of town. He said we were to go back to about the same point with Company C in support. We took up a defensive position 500 to 700 yards from our original positions—this was closer to Colleville. We were still in hedgerows and astride enemy avenues of approach. I think part of the company area bordered on the roads into Colleville. We now had machineguns (I believe they were from Company H). By now it was about 2100, nearly dark. It was quiet except for some aerial activity.

We spent the night of the first day in the positions near Colleville. We had been in almost constant contact with the enemy since we hit the beach.

Of the section, two men were killed on D-Day—PFC Ramundo on the beach and Sergeant Bisco later. Eight were wounded. Five men got DSCs, which were later awarded by General Dwight Eisenhower.



“Hell” 700:

THE KEY TO THE SOUTH PACIFIC

STANLEY A. FRANKEL

The strategic plan was clear: Move up the Solomon Islands chain, opening up a direct route to the Philippines, and from the Philippines, on to Tokyo.

In 1942 the U.S. Marines drove the Japanese out of Guadalcanal, the first island in the Solomons. In 1943—painfully, bloodily, in the equally impenetrable jungles—the U.S. Army’s 37th Infantry Division crossed New Georgia, sweeping what was left of the 15,000 defending Japanese into the sea (Map 1). The next and final island in the chain was

Bougainville, and here the tactics were dramatically altered, although the strategic concept remained the same.

In early November 1943 the 1st Marine Division and the 37th Infantry Division invaded Bougainville with a mission containing elements of both offensive and defensive operations. There was no thought of pushing across this 250-square-mile island to eliminate the 25,000 Japanese in a slow, brutal, costly action. Instead, the plan was to take only a small piece of it, perhaps six square miles, including the

deepest, best port at Empress Augusta Bay; build a perimeter defense along a line three miles long and about two miles deep; erect pillboxes, machinegun nests, gun emplacements; put up barbed wire; and cut fields of fire in front of a perimeter, stocked with floodlights in case the enemy attacked across the fields of fire at night.

Within those six square miles, a major airfield would be built, from which U.S. planes could range over the South Pacific as far forward as the Philippines, assuring the security of the convoys and task forces that, a year later, would invade the Philippines.

By 13 November the Marine Corps and Army units reached their two-mile deep objective against moderate enemy ground resistance and air strikes. During the next four months, the position was consolidated, the airfield was built, and the springboard to the Philippines was set (Map 2). Fighting had been limited. It was obvious that the Japanese had assumed, and hoped, that the U.S. troops would come after them in the jungle terrain. There, the Japanese could inflict heavy casualties as these troops cut their way, yard by yard, through this jungle.

By March 1944, however, the Japanese realized the Americans were going to sit this one out, manning defensive lines. If the Japanese wanted to inflict damage on these troops and take out the dominating airfield, they would have to attack head on.

The perimeter was dotted with hills and valleys, and Hill 700, the commanding height in that sector, was right in the center overlooking the airfield, and its precipitous sides swept down, unbroken, into the coastal plain. This hill was the linchpin of the defenses, the key to holding the perimeter positions to its right and left, and eventually the airfield itself.

Units of the 1st Marine and 37th Infantry Divisions were spread thinly along this two-mile perimeter, but there were

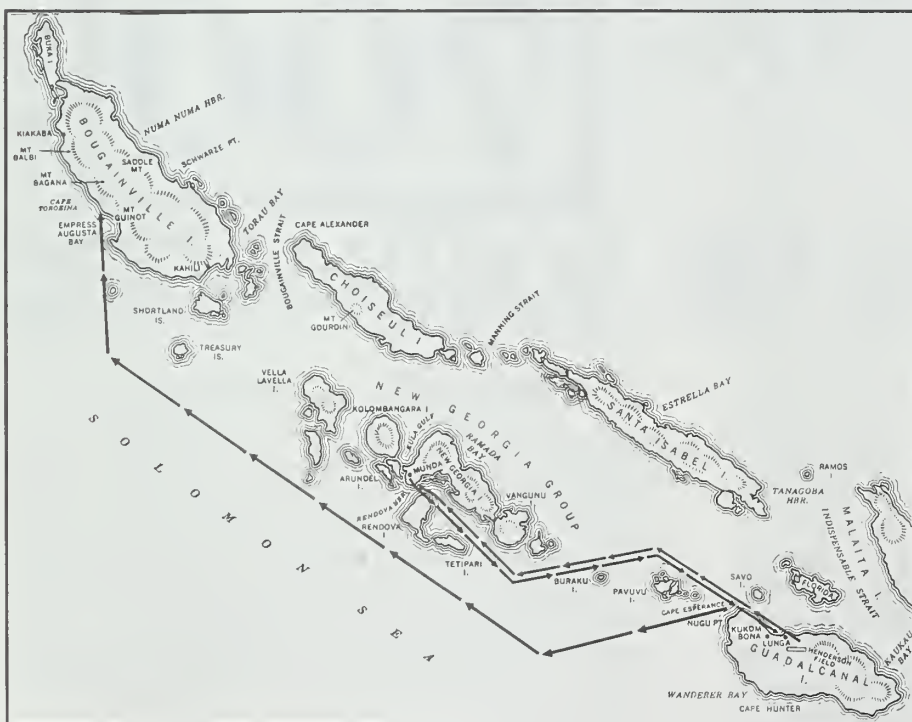
reserve forces that could be brought to the front to counter a Japanese breakthrough. Patrols were sent out from the front lines, every day, dawn to dusk, to find and fix Japanese troop concentrations. A few Japanese prisoners who were taken quickly "confessed" that the Japanese command had finally understood the U.S. defensive concept and tactical plan, with Hill 700 as its heart.

Inevitably, then, the massive Japanese attack (Map 3) began on 8 March and didn't wane until 13 March when Hill 700—which had been partially overrun by the Japanese—was taken back by 37th Division forces, who annihilated several thousand more Japanese in the recapture phase.

At 0630 on 8 March the first artillery shell from the attacking Japanese hit in the 145th Infantry Regiment sector. The 135th Field Artillery (FA) Battalion forward observer (FO) at observation post (OP) 0 in the sector, was immediately alerted. Within the next hour the Japanese dropped shells on the airstrip. The FO spotted the flashes and made a rapid adjustment, and his battalion poured a heavy concentration on the suspected positions. An observer on duty at the airstrip reported that 15 rounds of 15-centimeter shells had landed there. An observer at OP 6 on Cannon Ridge spied these flashes, and directed more counterbattery fire at the enemy guns.

The U.S. beachhead was on a coastal plain at the foot of the towering Crown Prince Range of volcanic mountains. The Japanese occupied the rest of the island. Two U.S. divisions could not spread their perimeter beyond the nearest foothills overlooking the beachhead. The best they could do was hang onto the lesser heights that dominated the airfield and deny those hills to Japanese artillery.

The hostile fire was coming from Blue Ridge, Hills 1001, 1111, 500, 591, and the Saua River valley. Although only a few pieces could hit the airfield from those positions, these



Map 1. The 37th Infantry Division's path through the Solomons.

rounds hinted at the potential for destruction if the Japanese could emplace their cannon on the dominating hills—mainly Hill 700, which the 37th was committed to defend.

At 0700 the division's 2d Battalion, 145th Infantry, took a few stray rounds from small arms, just enough to alert all positions and encourage the soldiers to clean their M1 rifles. Short-range patrols discovered that the Japanese were assembling in front of the battalion and that their major attack was expected to be against Hill 700.

The hill had immense strategic significance, a fact the Japanese realized as well as the Americans. One captured document reported that Imperial Headquarters in Tokyo—after a study of Bougainville's terrain and American defenses—had specifically designated Hill 700 as the focal point for the suicide effort. Japanese commanders announced to their hungry soldiers that there were enough rations around this hill to feed an army for ten years.

Shells continued to fall, not only on the airstrip but on the 145th Infantry, the 6th FA Battalion, the 54th Coast Artillery Battalion, and the 36th and 77th Construction Battalions (Seabees). Although casualties were light, blood pressures were high; the very inaccuracy of the Japanese fire subjected even the least strategic installation to these wild shells.

Helmeted repairmen kept the bomber strip in operation, filling up holes and smoothing out shell craters. Planes landed and took off with casual disdain, but a few were destroyed, and the U.S. XIV Corps commander seriously considered the possibility of declaring the bomber strip off limits. Light observation aircraft observers augmented the FOs in locating these guns. The 6th FA Battalion, to the right of the 145th sector, joined in the fire, and the 136th FA Battalion smashed their big shells into enemy bivouacs and dumps farther out.

At noon, the last patrol was reported in by the 145th, and the combined guns of the 135th, 6th, 140th, and 136th FA

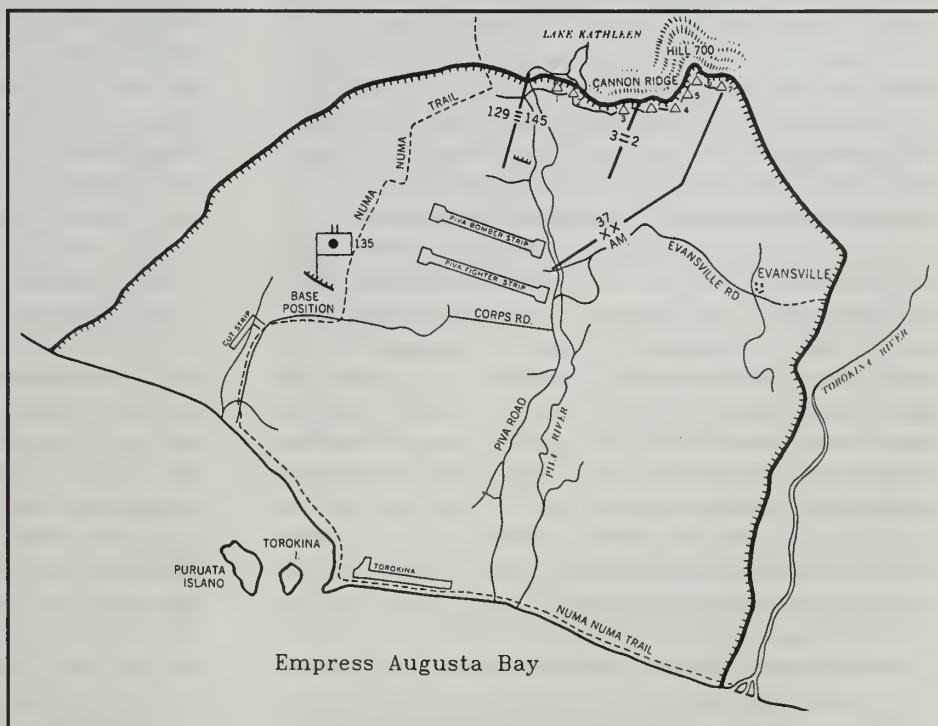
Battalions and two battalions of Americal Division artillery were readied for area fire on the Japanese who were moving toward our lines from assembly areas behind Hills 1111 and 1000. The Japanese 3d Battalion, 23d Infantry, and the 13th Infantry (less one battalion), of the Imperial 6th Division, crowded toward Hill 700 to join the 2d Battalion of the 23d, which had filtered in earlier.

For two hours, thousands of rounds of medium and heavy artillery fire blanketed this zone of activity. A Japanese prisoner later admitted that the Japanese 3d Battalion, 23d Infantry, was practically annihilated during this bombardment and that the rest of the troops escaped a similar fate by using a threadbare Japanese trick—moving close enough to our lines to get within our umbrella of safety. Anticipating this ruse, artillery observers had called for fire closer and closer to the 37th Division's front lines. Unit commanders ordered the men down into their holes, but common sense had anticipated the formal orders. The inevitable short rounds did little damage, except to sleep. Still, the Japanese were in excellent defilade, and it was difficult to reach an enemy hiding literally under our front lines. Mortars pounded away in the dark with unobserved results. The 136th FA alone expended 1,239 rounds on this day. OPs yelled back that the Japanese were scrambling up the hill now and that the artillery had subsided, so the artillery liaison officer with the 2d Battalion requested fires closer to his lines.

At night several booby traps and warning devices were exploded near the positions of Companies E and G, 145th Infantry, and the men in the perimeter holes replied with small arms and mortars. The Japanese retaliated with more rifles and now knee mortars. Fog and rain made the darkness impenetrable.

Invaluable during this night attack was a device cooked up by Staff Sergeant Otis Hawkins to light the area as soon as the

Map 2. The Empress Augusta Bay Perimeter.



first Japanese started jimmying the barbed wires: First, he ordered mortar flares fired; then, at the forward pillbox from which he observed mortar fire, he pulled wires that set off gallon buckets of oil ignited by phosphorus grenades. With this artificial lighting, Hawkins directed 600 rounds from 60mm mortars, and the infantrymen picked off many Japanese who had counted on darkness and confusion.

At the boundary between Companies E and G, two Japanese soldiers who had squirmed through the wire were killed by an alert sentry, and the 2d Battalion, 145th Infantry, admitted a possible enemy penetration at Hill 700. The Japanese—covered by the heavy rain and the darkness—using bangalore torpedoes and dynamite to blast holes in the wire and pushing one full battalion directly at our lead pillboxes—had shoved a foot in the door.

Refusing to withdraw, the hopelessly overwhelmed soldiers of the 2d Battalion, 145th Infantry, lived or died where they stood. The Japanese assaulted an isolated Company E mortar OP situated on a knoll on the outer perimeter. They had cut three of the four double aprons of protecting wire

The Japanese 23d Infantry attacked along the front from Hill 700 to Cannon Ridge. They came in waves, one whole battalion attacking on a platoon front. Brandishing their prized sabers and screaming battle cries, the officers climbed up the slope and rushed forward in an admirable display of blind courage.

before Staff Sergeant Thompson crawled out of his pillbox to investigate the noise and discovered them.

Just as the Japanese placed a bangalore torpedo under the fourth double apron, Thompson opened up with his Browning automatic rifle (BAR) and caught eight Japanese soldiers in the wires. Holding more enemy soldiers off with his BAR, he called back for a 60mm mortar concentration, adjusted it in and around the wire, ducked back in his pillbox, and then had a steady concentration dropped around the pillbox (often behind it) during the night. He and his men lived.

Not so fortunate were four men from Company G. Fighting desperately from their large emplacement, they were quickly engulfed by Japanese soldiers who attacked them from all sides. Recognizing the strategic importance of their assignment, they disregarded a possible escape route and stuck it out, hoping for reinforcements. They fired rifles, threw hand grenades, and knifed one Japanese soldier who got in too close. Then they were dazed by a bangalore torpedo a Japanese soldier shoved in next to the pillbox, and the Japanese rushed the emplacement. Semiconscious, the four men fired at and wrestled with their enemy. The next day when their bodies were recovered, 12 dead Japanese soldiers were also found inside the pillbox. Probably, many of the hundreds found around the position had also been killed by these four soldiers.

At dawn, elements of the Japanese 23d Infantry had occu-

pied a portion of the north slope and two strategic positions on the crest of Hill 700, penetrating U.S. lines 50 yards in depth and 70 yards in width.

At 0730 the forward observer from the 135th FA sensed a new attack and told his battalion, "Pour it on as close to me as you can get." Americal Division artillery relieved the 37th Division artillery of the counterbattery firing missions, and the 135th and 136th Battalions, plus the cannon company of the 145th, took him at his word. These artillery preparations seemed to melt the new Japanese attack. Further, the enemy salient was boxed in when 145th Infantry's lines were extended around the south slope of Hill 700. The division reserve was released, and the New Georgia-tested 117th Engineer Battalion was rushed into the vacated reserve trenches.

At noon, elements of the 1st and 2d Battalions, 145th Infantry, counterattacked to regain the lost pillboxes. Although some progress was made to the east of the penetration and on the south slope of Hill 700, the Japanese dagger still cut into the American perimeter. Japanese artillery and mortar shells dropped on these troops, and snipers picked away at their number.

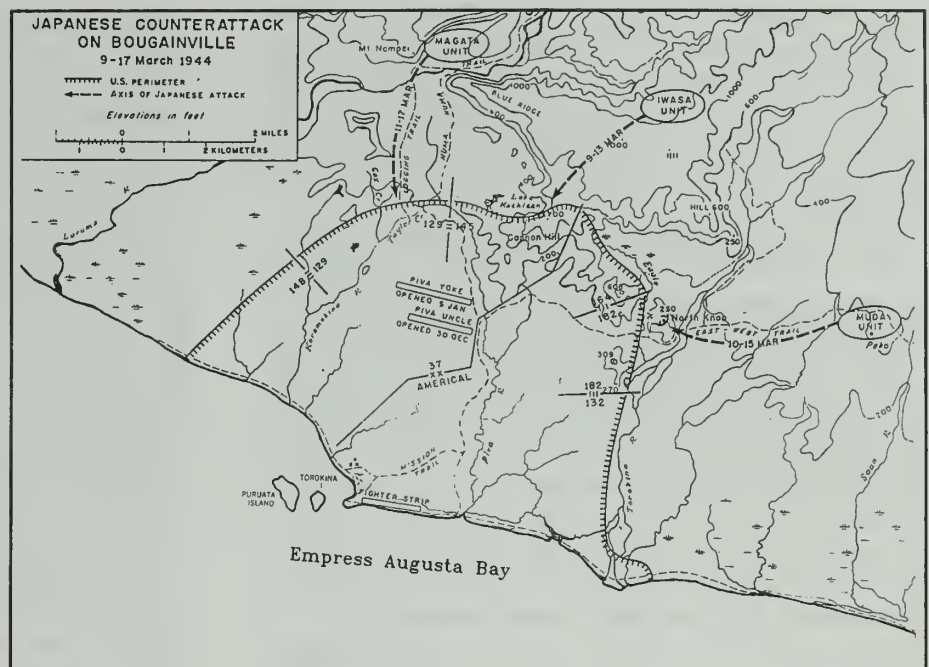
Japanese field artillery positions were spotted on Blue Ridge, and the 135th FA plastered them. Chemical mortars, adjusted by aerial observers, fired shells into the rear of enemy avenues of approach. By 1000 a few more pillboxes were recovered, but the Japanese repulsed attempts to cover the remaining positions on the commanding ground of Hill 700. The reverse slope, pitted with Japanese foxholes, spewed up reinforcements who kept pushing forward over the dead bodies of their comrades, clashing head-on with the attacking Americans.

Although darkness discouraged aggressiveness, during the night the Japanese chattered and whistled as they replenished American sandbags and enlarged American foxholes to strengthen their own precarious penetration.

The 135th FA alone had expended 2,305 rounds during the day. That afternoon, two light tanks from the 754th Tank Battalion had tried, with little success, to wipe out pockets firing on McClellan Road between the Rock and Hill 700. During the day, one U.S. officer and 28 enlisted men were killed and four officers and 135 men wounded. Japanese losses were 511 killed.

The night of 9-10 March was ominously quiet. The next morning the Americans pounded the Japanese, who seemed to gain strength with each hour of digging time and infiltration. A provisional battalion from the 251st Antiaircraft Artillery occupied a sector of the 145th's regimental reserve lines and, with terrifying accuracy, laid its 90mm antiaircraft guns on point-blank targets in the hills. At 1115, 18 scout bombers and 18 torpedo bombers pounded the targets marked by artillery smoke shells. The 135th, 140th, 136th FA Battalions and the 145th Infantry's cannon company kept pounding away. At noon, aircraft reported Japanese troop movement south along the Laruma River, and these troops were riddled by the big guns.

At 1700 the now thoroughly intermixed 1st and 2d Battalions, 145th Infantry—assuming that the Japanese were suffi-



Map 3. The Counterattack.

ciently softened—attacked again. Using bangalore torpedoes, rocket launchers, and pole charges, the infantrymen tried for the enemy pillboxes on the crest of Hill 700. The main line of resistance was tenuously reestablished with the exception of a 30- or 40-yard gap. Four pillboxes in possession of the Japanese had not been recovered. Ammunition supply was a knotty problem, and the men ran out of hand grenades in the middle of the attack. Japanese artillery and mortar shells dropped sporadically. At 1800 the 37th Cavalry Reconnaissance Troop was brought south and east of Hill 700, then advanced into ticklish main line of resistance positions in the Company G area. During the night, increased Japanese activity was detected in front of Cannon Hill; the 3d Battalion on Cannon Hill reported that the Japanese resorted to firecrackers and other ruses to draw fire. Seven enlisted men were killed that day, and seven officers and 123 enlisted men were wounded. The Japanese lost 363. The 148th Infantry sector, along with that of the 129th Infantry (not mentioned earlier or later), had been relatively quiet although patrols invariably ran into enemy squads and platoons.

During the afternoon of 10 March, Brigadier General Charles F. Craig, assistant division commander, along with the division G-3, visited the regimental and battalion commanders of the 145th Infantry on the south slope of Hill 700 to observe the situation for the division commander. It was late at night before they could return in halftracks over the bullet-swept road down which they had come.

During this night, Staff Sergeant William A. Orick, of the regimental intelligence section, and two other soldiers had a brush with the Japanese on top of Hill 700. His companions received bayonet wounds and were evacuated to the battalion aid station. Returning alone to the site of the struggle, he slipped a noose of telephone wire over the foot of a Japanese soldier killed in the struggle and pulled him down over the crest of the hill. The soldier proved to be an officer, and on his body were complete plans, with maps and directions, for

the attack on the beachhead. This information was rushed to the Division G-2 section and proved very valuable.

During the early morning hours of 11 March, the Japanese moved forward and occupied an empty pillbox on the forward slope of Hill 700. Using their reverse slope positions in front of the hill as a stepping stone, they launched a new assault at dawn. The 23d Infantry attacked along the front from Hill 700 to Cannon Ridge. They came in waves, one whole battalion attacking on a platoon front. Brandishing their prized sabers and screaming battle cries, the officers climbed up the slope and rushed forward in an admirable display of blind courage. Mowed down by heavy fire from the dug-in U.S. infantry, the Japanese soldiers unwaveringly advanced toward the spitting guns, tumbling over the bodies of their comrades.

The battle on Hill 700 and Cannon Hill was at such short range that infantry weapons had to repulse the assault waves, while the artillery hammered supply dumps and rear trails. The attack on Cannon Hill was stopped, and by 0800 the dazed remnants of a Japanese battalion had withdrawn, leaving hundreds of their dead comrades stacked up in front of the 145th Infantry line.

During the heart of the Japanese assault, Lieutenant Clinton S. McLaughlin, Company G's commander, dashed from pillbox to pillbox encouraging and coaching his embattled men. He stopped only occasionally to return the fire of a few persistent Japanese whose bullets tore his clothes to shreds and painfully wounded him twice. When the Japanese were within a few feet of the platoon's forwardmost position, McLaughlin jumped into the lead emplacement, which had already been outflanked by the Japanese. Then he and Staff Sergeant John H. Kunkel, firing point-blank at the invaders, killed enough of them to dissipate their threat. Both men were later awarded Distinguished Service Crosses.

On Hill 700 the Japanese had succeeded in holding onto a part of their salient, and fresh troops kept thrusting forward,

trying to occupy new positions and reinforce old ones. By this time, the men of the U.S. 145th Infantry were near physical exhaustion from the continuous three-day fight. The companies were intermingled beyond recognition, as were the platoons and squads, and their heartbreaking stand, outnumbered by a defiant enemy, had numbed their reflexes and their minds.

At this point, Lieutenant Colonel Herb Radcliffe's 2d Battalion, 148th Infantry, having been alerted the night before, arrived in a rear area and prepared to assist the 145th.

The difficulty of retaking the enemy-held positions on Hill 700 was obvious. The U.S. forces had to assault these pillboxes by crawling up a slope so precipitous that a foothold was difficult to secure and maintain. In addition, the Japanese guns swept all approaches from positions only 25 yards from the main supply road and overlooking it. Their guns on the crest of the hill could cover the ridge itself with intense, accurate, and deadly grazing fire. About 100 yards to the rear of these ground-emplaced weapons, other machineguns in trees on the spur of the hill also swept the entire front. With the exception of a few scattered trees and a series of shallow trenches, little cover was available to the troops moving up the slope.

Tanks and armored cars manned by reconnaissance troop drivers were the only safe means of moving casualties and supplies up and down the main supply road. Evacuation had been hazardous and backbreaking from the start.

On the first day of the fighting, litter bearers hand-carried the wounded over a back mountain trail to the reserve area of the 1st Battalion, 145th. That route was long and painful, and the only alternative was this supply road. On 9 March, ambulances tried to run the gantlet and succeeded. Encouraged, a convoy of litter jeeps and ambulances from Collecting Companies A and B, 112th Medical Battalion, drove to the Com-

Staff Sergeant Jack Foust of Company E spotted an abandoned light machinegun, disengaged the weapon from its mount, and, firing as he held it in his arms, killed a Japanese machinegunner who was shooting from a tree at the troops leading the charge.

pany G motor pool, an area that was safe for motor vehicles. But the route from here was dangerous, and the commander of the 145th would not order the drivers to run this Japanese blockade. Eight men went ahead on their own and, though under fire for most of the trip, brought their casualties back safely. Two drivers were slightly nicked by mortar fragments. One ambulance was ripped in the hood, cab, and windshield by two Japanese snipers, and the ambulance orderly was hit. After this experience, half-tracks from the cavalry reconnaissance unit were used.

Seventeen half-tracks made constant round trips from the lines to the aid stations and, although the litter bearers still had

a long haul, solved the most acute problem. Occasionally, the enemy was able to plunk a lucky mortar round or lob a grenade into the open tops of the half-tracks. But these were exceptions, and the reconnaissance drivers courageously backed up the infantry and their own troopers in the regiment's front lines by shuttling along this vital artery day and night.

Against these handicaps of terrain, supply, and determined Japanese resistance, the 2d Battalion, 148th Infantry, prepared to go into action. Lieutenant Colonel Radcliffe, with the battalion S-3 and his five company commanders, made a reconnaissance of the sector, and then presented his recommendations for an attack to General Craig, who was representing the division commander at the 2d Battalion, 145th Infantry command post. These plans called for an immediate envelopment of the remaining enemy positions on Hill 700 by Company E, and at 1320 the first Company E scout moved cautiously over the line of departure.

Company E edged forward and met the same Japanese tenacity and obstacles. The lead squad of the company's right platoon crawled awkwardly up the precipitous slope. Led by Lieutenant Broadus McGinnis, 11 men of the squad went over the crest together and met machinegun fire from their front and flanks. Eight men were killed instantly. McGinnis and three others dived safely into a connecting trench on the enemy's side of the hill and captured a pillbox, killing the three occupants. From his vantage point in the pillbox, McGinnis shouted instructions back to the rest of his platoon throughout the afternoon. At 1600, as he peered out of the pillbox trying to discover enemy intentions, he was killed by a burst of machinegun fire.

Further advances were suicidal, and at 1900 Company E was ordered to cease the attack; reorganize and dig in; hold the ground it was able to occupy; and supplement its defenses with one platoon of heavy machineguns from Company H. Wire teams from Company G strung concertina wire in the gap between the platoons, which was covered by fire from positions on the reverse slope of the hill. The rest of the battalion, meanwhile, had settled down for the night in the forward assembly area. The operations for the day, although unsuccessful in restoring the main line of resistance, did prevent further enemy penetration.

At 0800 the next day, after a night of intermittent firing, Companies E and F attacked again in a coordinated double envelopment, with Company G in reserve and Company H in general support. The two attacking companies glided slowly around the hill to the right and left, remaining in defilade as much as possible to avoid the Japanese machineguns that dominated the ridge in both directions, and then dispersed along the steep slope. The Japanese resistance had in no way lessened, but the U.S. troops—using every trick and weapon at their disposal, from smoke and fragmentation grenades to flamethrowers, rocket launchers, and dynamite—began their ascent to the top of Hill 700.

On Company F's side of the hill, a flamethrower team from the 2d Battalion headquarters company crawled up to destroy an enemy pillbox from which machinegun fire held up the company's advance. These two soldiers—Privates First Class Robert L.E. Cope and Herbert Born—had joined the

regiment after the New Georgia campaign and were now seeing their first action. They worked their way forward, dragging the bulky equipment over terrain dangerously exposed to automatic fire until they were ten yards from the pillbox. At this point, they suddenly rose up in full view of the Japanese and doused the emplacement with liquid fire. Then they came back through the same vulnerable area, recharged their flamethrower, and returned to destroy another pillbox. Altogether, they moved through the exposed sector five times and destroyed four enemy positions, along with their occupants and weapons.

The rocket launcher, or "bazooka," was a comparatively new infantry weapon that the soldiers of the 148th had not yet fired in anger. Staff Sergeants Jim Spencer and Lattie Graves volunteered "to take a crack at it." Preceding the company until they reached a shallow trench 20 yards from the nearest Japanese pillbox, they selected their target and with much anticipation launched their first rocket. Although this round completely missed the target, they immediately reloaded, aimed more carefully, and launched a second rocket. This time they scored a direct hit and demolished the pillbox. Now greatly encouraged, they concentrated their rocket fire on other Japanese positions, with Spencer holding the bazooka and Graves reloading it, yelling, "Make way for the artillery." The two dodged from one covered position to another, blasting away, either killing the occupant of the pillboxes or scaring them into flight. During the intervals between loading the launcher, Graves would resume fire with his rifle and on one occasion killed three fleeing Japanese. Spencer and Graves fired the bazooka periodically for three hours.

Privates First Class Jennings W. Crouch and William R. Andrick, armed with Browning automatic rifles, advanced with their platoon in the initial movement across the fireswept ridge. Then, under the withering Japanese fire, they ran toward the enemy-occupied pillboxes on the crest of the hill. From their final position 15 yards from the pillboxes, they began their assault, firing their rifles from the hip as they advanced. Japanese hand grenades wounded them but failed to stop them. Upon reaching the pillbox, they poured a steady stream of fire into the entrance until all the occupants were killed.

Over in the Company E sector, Private First Class John E. Bussard was out for vengeance. Thirty-six years old, married, and the father of three children, Bussard was draft-exempt but enlisted immediately after learning that a younger brother had been killed in action on New Guinea. Evidently, his one idea was to avenge his brother.

In the unsuccessful afternoon attack on 11 March, Bussard volunteered to climb the high slope to observe the enemy installations, although four others of his company had been killed and eight wounded in earlier attempts. Snaking his way inch by inch, he reached a large tree from which he could watch the enemy. The Japanese, well aware of his presence, kept him pinned down to prevent his return, and not until an hour after darkness was he able to report back to his commander with his observation.

The next morning, when the attack was in danger of bogging down, Bussard again volunteered, this time with anti-tank grenades to knock out the installations he had approached the day before. Passing through the same intense fire, he gained the shelter of the same tree. He fired eight rounds, but was unable to observe the effect because he had to fire between bursts of enemy guns and then pull in his head and shoulders to escape the hail of bullets that answered every round.

Since the results could not be determined, Bussard was summoned to his platoon's command post, a mere dent in the side of the hill partially sheltered by a three-foot boulder. Now someone decided to use a rocket launcher against the pillboxes, and again Bussard volunteered for the assignment,

Although the Japanese resistance had in no way lessened, the U.S. troops—using every trick and weapon at their disposal, from smoke and fragmentation grenades to flamethrowers, rocket launchers, and dynamite—began their ascent to the top of Hill 700.

saying convincingly, "I know my way up there better than anyone else."

Setting out a third time, now carrying a bazooka as well as his rifle, he reached the tree that had sheltered him twice before. To overcome the ammunition supply problem, the soldiers passed each round by hand along a continuous line extending up the side of the hill until the top man could toss it over the last 15 yards to Bussard. Twice, a rocket fell short of his reach and he had to risk enemy fire to recover it.

After six rounds he was told to cease firing, again because of the inability to observe the effect. He threw the launcher over the cliff and rushed to a hole 15 feet away where three members of his platoon had remained, pinned down, throughout the previous night. With these three men, he waited to take part in the assault they knew would follow and, during the next few minutes, they were fired upon by Japanese in the trees to their left. Bussard was wounded in the shoulder, but he remained to return the fire, killing one of the Japanese. Shortly before Company E attacked, six Japanese riflemen, with bayonets fixed, charged out of a position 20 yards away toward the hole harboring the four soldiers. All six were killed, two by Bussard, but his luck had run out. He, in turn, was killed by their fire.

Although the effects of his grenades and rockets could not be observed while he was using the weapons, two of his pillbox targets were later found to be demolished and 250 dead Japanese, many of them doubtless his victims, were counted in the 50-yard area immediately in front of the tree behind which he had taken up his position.

Meanwhile, Private First Class Vernon D. Wilks, a BAR man from Company E, had reached a one-foot depression protecting him from a machinegun 30 yards away. During

the next two hours, he remained in the depression, firing more than 25 magazines of ammunition and using four different BARs, although two members of his company were killed and 11 wounded within a few yards of him. Rising to a kneeling position between enemy bursts and firing accurately and rapidly before the Japanese machinegun was again directed at him, Wilks inflicted heavy casualties on the gun crew that was holding up his company. He also distracted the attention of another enemy machinegun crew firing on Company F.

By noon, Captain Richard J. Keller of Company E and Lieutenant Sidney S. Goodkin of Company F reported by radio to the battalion commander: "We believe we have got them. We are going over the top together." They personally led the assault, shouting defiance at the Japanese and encouragement to their own men.

Fifteen minutes after the charge began, Captain Keller was struck down by Japanese fire and seriously wounded in the chest, but Lieutenant Sam Hendricks assumed command of the company with no interruption in the advance. Lieutenant Goodkin was leading his men despite painful arm burns he had suffered earlier when a smoke grenade exploded amid several incendiary grenades and ignited them. When the fires menaced two wounded men in the same hole, Goodkin had tossed out the burning grenades one by one to safeguard his men.

The troops stormed up the hill and over the crest. Staff Sergeant Jack Foust of Company E spotted an abandoned light machinegun, disengaged the weapon from its mount, and, firing as he held it in his arms, killed a Japanese machinegunner who was shooting from a tree at the troops leading the charge. On both sides of the hill the remaining enemy emplacements were being systematically wiped out. By 1600 the 2d Battalion had regained Hill 700, and the U.S. lines were restored.

A few Japanese who had survived the onslaught would not give up. Mopping-up operations were repeatedly interrupted by spasmodic fire from two pillboxes, each occupied by a lone rifleman who had apparently tunneled into the steep hill and could not be dislodged by rifles, Thompson submachineguns, or bazookas.

But there was one trick left, and it remained for Sergeant Harold W. Lintemoot and Private First Class Gerald E. Shaner, of the 2d Battalion ammunition and pioneer platoon, to pull it out of their bag. Bringing demolition equipment to a point behind the crest of the hill, they prepared explosive charges, fastening six half-pound blocks of TNT to a board about four feet long and attaching a slow-burning fuse. In turn, Lintemoot and then Shaner scurried up to the pillboxes. The hill provided cover until they were within ten yards of the emplacement. Then they rushed over the remaining distance, placing the charge on top of the pillbox and withdrawing to a nearby position that offered them protection from the flying debris. In five seconds, the pillbox was liquidated, and no Japanese now contested the U.S. occupation of the hill.

The battle for Hill 700 was the bloodiest in which the 37th Infantry Division had yet participated, exceeding in carnage

any single action of the New Georgia campaign. A great brown clearing stood on the reverse slope of the hill where the Japanese had made their attack up the hill. Fifteen hundred Japanese soldiers were buried in graves and foxholes on that side of the hill. Captured prisoners claimed that the four days of fighting had resulted in the virtual annihilation of the 2d and 3d Battalions of the Japanese 23d Infantry and the 13th Infantry Regiment, which had been pitted against this thin, narrow front of the U.S. 37th Infantry Division.

The battle for Hill 700 was the 37th Division's first defensive action. Heretofore, the division had been on the offensive. Its mission on Bougainville was to set up a perimeter and defend the airfield, the capture of which would have imperiled the whole installation on Empress Augusta Bay.

The Japanese staff work in this battle was good. They had correctly evaluated the importance of the hill and had cleverly approached it through the defiles in the mountains. They had performed magnificently in transporting supplies and ammunition over the mountains and through the jungles. They had hand-carried large guns and emplaced them on almost inaccessible heights. They fought up a steep slope that would have been difficult to climb empty-handed. They attacked in force on a narrow front and took advantage of a dark, rainy night to penetrate a key section of U.S. lines. They took tremendous losses without wavering. They held their advantage until they were exterminated. This attack was planned as their main effort. Never in their campaigns in the Pacific did the 37th Division meet Japanese soldiers equal to these in valor or ability. This was the real test of the division's fighting power.

The defense of the hill was committed to the 145th Infantry. Although the point of the attack was within the 2d Battalion sector, the whole regiment was eventually engaged in the fight. Behind it was the support of the entire division. The artillery of the division and of the entire corps area had been emplaced so that it could be used in support of an action on any part of the perimeter, and it was used as planned. The division's reconnaissance troop took a place in the line. The 117th Engineers laid aside their picks and shovels and, taking up rifles, took the place of infantrymen. The 2d Battalion of the 148th Infantry made the counterattack that cleaned off the ridge. Quartermaster troops, ordnance men, and medics brought up the supplies and ammunition and carried away the wounded. The MPs patrolled the roads and fought off the souvenir hunters; the straggler line was used not to keep the front troops from coming back but to keep the sightseers from going forward.

The game was over!

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A COMPANY COMMANDER'S KEYS TO SUCCESS AT THE NTC

CAPTAIN RICK A. BAILLERGEON
CAPTAIN JOHN R. SUTHERLAND, III

Success at the National Training Center (NTC) should not be measured in victories against the opposing force, although a few wins can do wonders for a unit's confidence and morale. Success should be based on overall improvement during the NTC experience. The opposing force (OPFOR) is probably tougher than any real enemy most units will ever face, and that is to their advantage.

On the basis of our combined experience of more than 100 NTC rotations—as OPFOR, observer controller (OC), or Blue Force—we offer the following observations and advice to those of you who will face the challenges of this training. These lessons also served us well as mechanized infantry team commanders during Operations DESERT STORM and DESERT SHIELD.

For simplicity, we have broken our comments down by battlefield operating system (BOS):

Maneuver

Looking first at offensive maneuver, it is important to control the tempo of the attack. A slow, deliberate, creeping attack gives the defender time to counter your strength. Speed, properly regulated, allows you to deny the enemy the ability to mass his fires. You are calling the shots initially and should maintain this advantage by regulating your speed to portray things to the enemy that will trigger or retard the employment of his reserve.

Remember that tempo is not just speed; you have to know when to proceed and when to pause to make a hasty plan. A hasty attack, poorly planned, risks the loss of mass, fire support, and command and control. An unduly long delay costs you the element of surprise and may invite the enemy to “spoil” your attack.

Controlling your pace by phase line is an excellent tech-

nique. The OPFOR does it all the time. At first, move slowly and deliberately toward the target you want the enemy to think of as your objective. Then you'll find the gap you're looking for and disrupt the enemy's decision making process.

The desert seems to favor speed. It reduces your exposure time and the enemy's decision time. There is no real need to bound in the open. Where the terrain allows, by all means, do it, but bounding usually broadcasts your intentions and leads you into a piecemeal assault.

Decide whether your attack is terrain-oriented or enemy-oriented. Terrain orientation seems to work best in the desert. The OPFOR will routinely try to dominate your lines of communication by seizing key terrain that cuts you off from your support, and you can do the same to him. Once you've taken the key terrain, you can wait for him to come to you.

Enemy orientation forces you into taking out the enemy, hole by hole. The defender's preparation will cost you in this scenario; all he has to do is wait for you to come into his fire sack.

Know your tactical terms as defined in Field Manual (FM) 101-5-1, *Operational Terms and Symbols*. A common tactical lexicon will prevent disaster and ensure that everyone understands. For example, everyone must know what is meant by *seize*, *secure*, *clear*, or *destroy*. Seize versus destroy, for example, will also tell you whether you are ter-

your leaders to expect it. Then the fog of war should not be all that unexpected or unsettling. Identify the indicators that tip off a course of action, and look for them amid the confusion. If your subordinates know what you're looking for, they may find it first and must be ready to act on their own to exploit the opportunity.

Identify and focus on a weak point. If you try to hit everywhere, you will fail. Reconnoiter the potential weak point, or ask battalion headquarters to do it, then attack it. Don't fool around too much with supporting attacks against strong points.

Overwatch when you can gain firepower superiority. If you can't gain the ground or firepower advantage, don't waste time trying to set up overwatch on the enemy. Many units have been destroyed in poor overwatch positions because of inferior firepower. A BFV task force has standoff on most opposing systems, and an intelligent overwatch position—occupied with overwhelming firepower—will dominate the situation. This ties into unnecessary bounding; many unit attacks suffer a serious loss of speed and momentum due to poorly planned bounding.

Always know your strengths and weaknesses, especially while in the attack. Don't neglect the "own troops" assessment during your analysis of METT-T (mission, enemy, terrain, troops, and time). The right lieutenant needs to be the main effort, but he shouldn't carry the burden all the time. Not only will he burn out, but the others will never have an opportunity to develop. Give your attached platoon leader a good workout, and let him assume an appropriate share of responsibility from time to time; he may surprise you.

Defensive maneuver is next on the list. There are a few good rules of thumb for building engagement areas. In the desert, you have a big engagement area (EA) and a big battle position (BP). In the woods, you have a little EA and a big BP. Again, you don't need to mass vehicles to mass fires. A team BP in Saudi Arabia could easily exceed 2,000 meters and still mass two-thirds of its fires anywhere in the EA. A big BP gives you more options and more protection. A big EA in the desert is a must. Why restrict your ability to kill? Simply draw a range fan for each position on the basis of weapon capabilities, stake them in, and rehearse fires to each range. If you can't fire there consistently, move your trigger line in until you can easily hit with most of the available weapons. If you're outnumbered or the enemy has standoff, consider using reverse slope positions to shorten the EA and protect your force from enemy observation and indirect fire. Whatever method you use, make sure two-thirds of your combat power can kill anywhere in the engagement area.

Consider BPs on the desert floor, where digging in is usually easier and enemy target acquisition is difficult. Enemy reconnaissance elements have a hard time pinning you down there; they can't really close on your positions because of all the open desert that surrounds you. The enemy will therefore have to guess at the grids to holes and spoil he observes from high points.

Aggressively hunt the enemy's deep reconnaissance teams; if you don't find them, your success is in jeopardy.

Train a MILES expert for every platoon who can identify equipment problems during the boresighting. This is what the OPFOR does.

rain-oriented or enemy-oriented. Encourage initiative in everything except the understanding of tasks; there is no room here for interpretation.

Companies should operate as company teams, and tanks should generally lead in the desert. Agility is important. The team can be hit by tanks, antitank systems, or anything else, from any direction at any time. It takes a team to respond to these multiple and diverse threats. Because you are vulnerable at long ranges, tanks should lead the way. Tanks are more survivable and have a lethal rapid-fire response that can kill any enemy armor. The tank engagement will give the Bradley fighting vehicles (BFVs) time to set up their TOWs and deploy their infantry.

Stop your assault beyond the objective, not on it, and clear back to the objective with infantry. The enemy will target your new gains with artillery, chemicals, and counterattacks.

Dispersion is good, particularly in the desert, and it should probably increase as you close on the enemy. You don't need to mass vehicles to mass fires. Initially, travel in a tight formation for good command and control, then disperse for protection.

Don't tie your unit to the plan, but build in flexibility. Clearly depict your desired "end state," your intent, and allow initiative to reign. Accept chaos and confusion, and train



Thorough planning, detailed rehearsals, and aggressive execution are key ingredients of success at the National Training Center.

You won't be able to prevent their insertion, so act accordingly to deceive them until you can find them. The use of helicopters with their FM homing devices can be very effective in identifying general locations. Even with directional antennas, under cover, you may fix locations well enough for infantry to find and kill them.

Rehearse your direct fire plan. Use a global positioning system (GPS) initially to map out your EA. If a target is lost to two or more platoon positions, you can plot artillery targets. A MILES kill rehearsal will do wonders. Each vehicle should verify kills at maximum range at each trigger line; then a combat speed rehearsal can be conducted to test exposure time and ability to engage. Make sure you can mass your fires at the critical place and time.

Delegate tasks during defensive preparations. You can't be everywhere at once, and if you try, you'll fail. Your team will also fail, and your subordinates will think you don't trust them.

Understand the threat. Know your doctrine. Apply the principles of intelligence preparation of the battlefield (IPB) at all levels, and ensure that your leaders understand what the enemy will look like, what his capabilities are, and what you think his course of action will be. State the indicators that will tip you off as to the enemy's commitment to a given course of action. Know when, how, and why he will deploy.

Manage your preparation time. Every minute you waste is a minute the attacker gains. Prioritize your tasks, and get them done. Improvement should continue up until you hit readiness condition (REDCON) 1.

Track the preparations in your company command post. Know the percentage of completion on obstacles, holes, and rehearsals. Reporting and inspections will guarantee that things get done.

Rehearse, rehearse, rehearse! Do it in the daytime, at night, in protective masks, and under any other adverse conditions you foresee. Go from hole to hole and backbrief each crew on its portion of the EA. Make sure all target reference

points and trigger lines are clearly marked so everyone can see them.

Intelligence

Boil the IPB product down to company level. Don't rehash the product of the higher unit. You need individual vehicle positions, trench lines, obstacles, and fire sacks. Plan projected range fans for enemy indirect fire weapons and predict the likely counterattack avenues and the size of force expected.

Do your own IPB and compare it to that of the next higher unit. You need not agree, but you must clarify any disagreement. Remember that the IPB process is continuous, and update as reports come in. Also remember that the template is just that—not necessarily the enemy's plan—so don't get tied to it as if it were gospel.

Understand where the security zone is, what's in it, and how the enemy will fight. Know what the division reconnaissance elements look like and how many of them there are. Know the composition and timing of the enemy assets that will be used. Distinguish between a combat reconnaissance patrol and a forward patrol. Know how to recognize the forward support element and the advanced guard.

Do a time-space analysis, and use doctrinal movement rates. Getting close air support (CAS) and artillery to land on a certain enemy formation at a given time requires an understanding of these movement rates.

Don't confuse doctrinal templates with situational templates. In the desert, frontages expand; in dense terrain, they contract. A doctrinal template is the enemy course of action in a perfect world, unconstrained by terrain and weather. A situational template applies the actual situation to the enemy's schoolbook solution.

Use observation posts (OPs) whenever you are stationary; you're always being watched and can't let your guard down. Give the OPs a mission and some specific guidelines for observation. Require regular reports from them. Whether

they have anything to report or not, you need to know that each OP is still operational, and you need to stress that the absence of activity is as important as its presence.

To prevent fratricide, all maps must show the locations of the scouts. Post these locations on all of your maps, and track any changes.

Fire Support

Give your purpose, priority, allocation, and restrictions for all indirect fires. Define the effects you want to achieve with them, including special munitions such as smoke. Give your guidance to the fire support officer (FSO), and let him, the expert, prepare the Fires paragraph of your order. Also see that he gets your input into the battalion fire plan.

Plan where the FSO will move. He doesn't need to be glued to you if you're moving. He may do a better job from a support position where he can remain stationary. Plan and rehearse a jump vehicle for him.

Register—or, more correctly, adjust—your fire plan. Make sure rounds will land where you've planned for them. At the NTC, your OC will have to help you do this. Match your fires overlay with your operations and intelligence overlays. They must support each other.

Plan illumination and smoke; they help in identification and obscuration and can also be used as navigational aids. Be careful with smoke. If it is fired too early or too late, you may endanger your entire unit. As with all fires, plan for smoke before, on, and beyond the objective.

Remember that preplanned FASCAM (family of scatterable mines) takes 20 minutes and unplanned takes 40 minutes. Since FASCAM diverts a lot of artillery tubes from other missions, it should be fired when other indirect fires are not critical.

Artillery is the biggest killer of OPFOR infantry, especially at night, and it doesn't give your positions away. When you designate priority of fires, designate when they are to shift and what will trigger the shifts so all your leaders will know. The first shots you take should always be artillery. If CAS can help, ask for it.

Take your FSO to all operations orders (OPORDs). Include him in the development of your course of action, so that he fully understands your intent.

Mobility and Survivability

Have a combat leader site in all of your obstacles. Your people know the plan better than anyone else. Patrol your obstacles, and close any gaps. Cover disruption obstacles with artillery at least, and fix and block closer obstacles with direct fires.

Don't design obstacle plans that will keep the enemy out of the EA. Funnel him in, and hold him there. All obstacles can and will be breached, and they won't win battles without complementary effects.

Have a plan for digging survivability positions. Assign a dozer chief, and ensure that handoffs are on time and under the positive control of a combat leader who can get the equipment to the sites in order of priority. Take care of the dozer

operators, and see that they get food and rest.

Dig standard two-step fighting positions, and have each proofed by a combat leader, the one who will fight it if possible. A poor position is worthless.

When you approach an obstacle, decide on a course of action quickly or die. It's there for a purpose. Tanks and BFVs can easily drive through wire; there is no need to stop unless mines are present. If you use a BFV to run through wire, make sure the skirts are bolted up so the wire won't get caught in the tracks.

Mark breaches, and make sure all your soldiers know your marking scheme. Pyrotechnics are always a good hasty marking technique; formal markings for follow-on forces can be emplaced later when the situation has stabilized.

Position vehicles and obstacles on the basis of the EA where you want to kill the enemy, not the other way around.

Nuclear, Biological, Chemical (NBC)

The NBC noncommissioned officer (NCO) must be forward. He can't do his job from the combat or field trains. Now that the executive officer has a BFV, that's a great place for the NBC NCO as well.

Remember that the company doesn't make decisions on MOPP (mission oriented protective posture) level but makes recommendations and requests to battalion, where they know the overall situation.

Brief all attachments on your NBC standing operating procedures (SOPs). Plan and rehearse for the exchange and hasty decontamination of MOPP gear.

Report contamination as soon as possible so that someone else will not run through the same area and themselves become contaminated.

Expect 15 to 30 minutes of nonpersistent chemicals before an OPFOR attack and upon seizure of an objective, just before the counterattack. Expect persistent chemicals to be used like an obstacle, fired on uncovered avenues of approach.

Automatic masking for artillery is a dangerous habit. In making your decision, evaluate the timing, the proximity of the enemy, and the location.

Combat Service Support

Poor precombat inspections (PCIs) lead to serious maintenance problems. Designate command directed spot checks every day. A good time for these is during resupply operations, and you should be present if you can.

Suspension equals combat power. A functioning turret is useless if it's on an immobile chassis. Suspension is easy to check, seldom fails, but is generally overlooked. Air induction is another big killer in the desert, as are fan towers and fuel filters.

Fix forward no matter how much it hurts. The battalion motor officer may fight you on this; BMOs usually want to pull things back to the trains for repair, where parts are more readily available and the mechanics can work in a more secure area, free of distractions. Bureaucracy and red tape can cause you to lose the vehicle for a long time. Make them

pack up and come to you. When you're in prepared defenses, keep your prescribed load list (PLL) and tool trucks. This will solve innumerable small problems and improve preventive maintenance. You'll need to enlist the support of the battalion motor officer, the headquarters company commander, and the battalion executive officer (XO); you're the commander, you own the combat power, and you're responsible for the success or failure of the unit.

Dig in your defensive prestocks or lose them to OPFOR artillery.

Use MILES-damaged vehicles to haul MILES casualties, since both will be out of action for some time.

Plan your resupply operations. Make sure they are orderly uploads of Classes I, III, IV, V, and VIII, with maintenance checks and DA 2404 turn-ins. Eat in your position, not at the LOGPAC. Vary the times to prevent OPFOR disruption or interdiction of your logistics flow.

Cross-level tow bars, tow cables, and slave cables so that each section and platoon is covered. Mark their locations on your map, and ensure that everyone knows where they are. Make sure everyone has the proper number of towing shackles mounted as well.

Vehicles need to be cranked up regularly to charge the batteries that run the thermal sights and the radios. Make sure this happens. At a stand-to, all vehicles need to fire up to be ready for battle; but if each one cranks up on its own, a smart scout can count the number of vehicles in the position and estimate your strength. You can prevent this problem by using an FM short count to start all vehicles at once.

Don't get too tired for preventive maintenance checks and services (PMCSs). Include all systems, vehicles, weapons, and the troops themselves.

Always know where the battalion aid station is, and have the medics rehearse getting to it and back. Plan and rehearse medical evacuation. Apply all contingencies to the plan, such as mass casualties or loss of ambulance.

Have the XO or first sergeant and the maintenance sergeant monitor the administrative/logistical net at all times.

Prioritize your MILES casualties to prevent excessive "died of wounds" casualties.

Finally, keep track of all classes of supply.

Command and Control

Use sketches and sand tables to clarify your orders. Get graphics to everyone; all vehicles and dismount squad leaders need graphics so they can track the battle and report intelligently.

Involve your NCOs in tactical planning. This doesn't mean pulling them away from the troops often. Give a warning order and update it frequently so that they know what is going on, and invite their critical analysis.

Plan redundant communications, and use wire where applicable. Use pyrotechnic back-up signals and flags.

To remain alert and creative, leaders must sleep. Make and enforce a sleep plan. This may mean giving the counter-reconnaissance battle to the XO so you can sleep and then letting him sleep during the early portions of the main battle.

Don't leave an OPORD briefing with any of your questions unanswered. Doing so is a disloyalty to your commander and a crime against your troops. No one has all the answers or has thought of all the contingencies, and brain power that is pooled is more powerful.

Trust the XO and first sergeant to move the unit while you take the platoon leaders and the company FSO on leader reconnaissances.

Be where you can see the battle and influence the action, whether it's through your presence or your orders.

Discipline your radio nets, especially at platoon level; this means no unnecessary radio traffic and no extended transmissions. Don't automatically jump to another net when yours is being jammed. The enemy jammers will know they have been effective and chase you from one net to another.

Salt, or mark, your route to the line of departure, no matter how familiar you think you are with it. Stage for the move just after dark to ease movement. If you wait, you will be open to numerous problems. Rehearse the movement out of the assembly area. This rehearsal should be like a battle drill.

Tie your graphic control measures to identifiable terrain features. Soldiers can't see grid lines on the ground.

NTC MILES Issues

Boresight your MILES equipment twice a day and after every major movement. The same goes for night vision goggles in other training exercises. If you can't kill with MILES, you need not plan a real battle. Train a MILES expert for every platoon who can identify equipment problems during the boresighting. This is what the OPFOR does.

Conduct PMCS on your MILES equipment, which is a weapon system at the NTC. Direct-exchange any equipment that can't kill at maximum range.

Watch your vehicle load plans, and don't let equipment dangle over your MILES belts and cover the sensors. This is a MILES violation, and the OC will score the vehicle as "killed." Cheating only encourages bad habits and poor tactics that will get soldiers killed on a real battlefield.

Know the MILES kill codes so you don't allow bogus kills. The OCs will re-key a bogus kill code if you tell them about it.

Change your MILES batteries regularly to maintain the proper weapon effects. As the batteries weaken, so do your MILES systems.

Practice your MILES gunnery. A good BFV or tank gunner may not be a good MILES gunner if he doesn't practice.

The Player-OC Relationship

Keep the OC informed of your activities. Don't pick up and move without telling him. Although he is a distraction in many ways, he's also a fellow soldier who is there to help you improve your unit's operations.

Wear your MILES equipment at all times. This is a pet peeve to the OC. If the OPFOR attacks at an unexpected time and you're not wearing MILES gear, you will not be a player, and no lessons can be learned. The OC is not the enemy; he wants you to do well. He will enjoy your success

and especially seeing your improvement.

Remember that the OPFOR is made up of U.S. soldiers who train hard all year. Don't build up animosity against them. If they don't exploit your weaknesses at the NTC, your unit can't learn from them. (They were major contributors to our success in the Persian Gulf.)

Follow your SOPs, and don't change the way you do business simply to accommodate your OC. If he brings up some good points, use them, but don't do it his way just to please him.

Maintain discipline and military bearing during the initial briefings in the "Dust Bowl." You don't want any outsider, OC or not, to think your unit is substandard.

Don't whine about OPFOR "cheating." It is unlikely that the OPFOR soldiers have intentionally cheated. For them, cheating is a field-grade article 15 offense. Too often, unfounded cheating claims are used as an excuse, and the OC doesn't want to hear it. Most likely, any perceived cheating is due to a MILES system failure.

Leave your ego at the door during after-action reviews (AARs). Take no pride in the plan, but invite criticism. This is how we learn. A good idea for improvement will come out of every AAR. Implement these ideas as soon as possible in an environment where you can really test them.

Don't criticize the OCs or the OPFOR on your radio net. All nets are monitored, and this is unprofessional behavior.

Don't tolerate cheating in your company. The OCs know all the tricks. Your unit will suffer a serious decline in credibility, and its every success will be suspect.

Don't be stubborn; listen to the OC. He may not be a genius, but he has seen a lot of units and learned a lot of techniques that will be more than helpful to you.

Let the OC know that your goal is continual improvement, not beating the OPFOR, and this is a healthy foundation to build upon.

NTC Draw and The Dust Bowl

Get the XO, supply sergeant, communications sergeant, and company master gunner on the ground early to prepare them for the equipment draw. Meet with them once or twice daily to discuss your progress and to correct problems.

Do a complete and thorough inspection of all equipment you draw, including MILES gear. Don't allow your soldiers to be pressured into accepting equipment that is substandard.

Establish a good working relationship with the civilian personnel during the draw. They are the same people you will work with during turn-in; don't create animosities that will haunt you later.

Organize your Dust-Bowl area to facilitate your command and control your draw. The area should be professional and military in appearance and conduct. All eyes are on you while you're there, and you need to show that your unit is a professional fighting force.

Continue training during this period. There will be opportunities, and you need to take advantage of them as they arise. Work on MILES gunnery, marksmanship, and proficiency so your soldiers will be confident of themselves and the equip-

ment. Practice MILES troubleshooting, MILES gunnery, and individual movement techniques with MILES as much as possible.

Do your PCIs before leaving the Dust Bowl, or suffer the consequences.

Manage your time so your soldiers can get enough rest and some recreation. Don't let them get tired out during the draw, or they'll lose the fire before the fight.

NTC Turn-in

At the end of the training, treat the turn-in like another battle; plan, prepare, and execute violently.

Keep a firm grip on your sensitive items of supply. In the chaos of the turn-in, it's easy to lose track of these items, and a loss at this time can taint even a good rotation.

Be aware of safety considerations. The soldiers are tired after two weeks in the desert and may become careless.

Check the dumpsters, and be ruthless on what can and cannot be thrown out. It is not unusual to find discarded pyrotechnics, or parts that have been thrown out simply because some soldier found it easier than turning them in. The entire chain of command needs to get involved in preventing this waste.

Don't let the soldiers or, especially, the leaders get too eager to head for home. There is a job to be done first.

The turn-in is the XO's show, but you need to keep in touch with everything that is going on. Check on the troops; don't let them think you've just vanished.

Prepare your vehicles fully before trying to turn them in. If you try to rush them through the process, they'll bounce back, and you'll lose a lot of time.

Capture the lessons of the training rotation while they're fresh. If you wait until you get home, you'll forget them.

Help your fellow commanders, and ask them to help you as well. If everyone tackles turn-in as a team, the whole process will be easier.

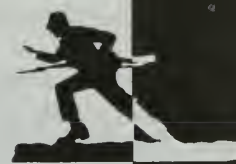
Keep an updated status board to track overall progress.

Your NTC rotation will probably be the best training opportunity you and your unit will have during your command. Treat it as a training event instead of a test. A successful rotation is measured by lessons learned and improvements made. Do not put undue pressure on yourself or your soldiers to win or to be error free. Attack all tasks, in the field or in the Dust Bowl, as missions to be planned, rehearsed, and aggressively executed. Remember that your primary goal is your unit's improvement.

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TRAINING NOTES



Peace Operations

LIEUTENANT COLONEL WILLIAM J. MARTINEZ

Since the end of the cold war, our environment has been volatile, uncertain, complex, and ambiguous. Order and predictability have been replaced by disorder, even chaos, or "the new world order"—what one observer has called "the old world disorder in new configurations." We no longer have a specific enemy, and we find ourselves searching for our role in this new world order. Although the possibility still exists for major conflict in certain areas, it is far more likely that we will find ourselves in peacekeeping, peacemaking, or peace-enforcement operations.

The word *peacekeeping* itself is complex and ambiguous for us, because we have little experience in training soldiers for such missions. Peacekeeping involves monitoring and enforcing a cease-fire that has been agreed upon by two or more former combatants. It usually denotes an atmosphere in which peace exists and the former combatants, to some extent, prefer peace to continued conflict.

Peacemaking is essentially settling the disputes of others. The United Nations uses this term to mean the diplomatic process of negotiating peace. This definition causes a great deal of confusion for the American public, however, because combat units may be

required to impose a cease-fire that is opposed by one or both combatants.

Peace-enforcement is a term used by the Joint Staff to mean the physical interposition of armed forces to separate two combatants who are still fighting.

The most effective way to train for any of these operations is in a battalion task force with all its attached combat support (CS) and combat service support (CSS) elements.

Traditionally, peacekeeping operations have required lightly armed forces—with only small arms for self defense—because of an existing cease-fire or treaty. An excellent example of a peacekeeping operation is the Multinational Force and Observers (MFO) mission in the Sinai in Egypt. In the MFO, the mission is to observe and report any violations of the 1979 peace treaty between Egypt and Israel.

Missions in this operation include establishing and manning roadblocks, checkpoints, and observation posts; identifying Egyptian and Israeli ships, aircraft, and vehicles; reporting; and small-unit patrolling, as well as establishing a base camp and logistical base to support all of these operations. The implied missions could also include riot control, mine clearing, defensive operations, and working as part of a coalition.

Some of these tasks are inherent to the infantry battalion task force mission (reporting, small unit patrolling, defensive operations, base camp operations, and logistical support). A task force would need to conduct refresher training on these tasks before assuming the mission, and they should not take up a great deal of additional training time. Working and training as a task force will establish the relationships needed to function effectively when deployed.

Additional training time will be spent on actions associated with a peacekeeping operation (roadblocks, checkpoints, observation posts, vehicle/aircraft/ship identification, riot control, mine clearing, and the command and control of working with a coalition force).

Vehicle/aircraft/ship identification can be mastered as concurrent training and can easily be integrated into any training program.

Command and control procedures with coalition forces can be trained with leaders only participating in a tactical exercise without troops, or they may be incorporated into a command post exercise, map exercise, or communications exercise. This training needs to be executed with all task force leaders present. The missions that will require soldier-intensive training are roadblocks,

checkpoints, OPs, riot control, and mine clearing.

Military police make excellent instructors for roadblocks, checkpoints, and riot control. Engineers are experts at mine clearing. Observation posts at squad level require training because this is not a combat mission and there are no battle drills for it. The infantry squad will need time to work out the different roles required. Preparation time will differ with each mission. Four weeks is probably the least and three months the most time needed (including deployment preparation).

One of the drawbacks to a peacekeeping mission is that the force may not have the time to conduct their usual combat training. For extended peacekeeping missions, this could degrade the task force's combat readiness. For this reason, most U.S. peacekeeping forces rotate every six months.

By contrast, peacemaking operations should be continuous—perhaps beginning before a peacekeeping or peace-enforcement operation and extending well beyond. It is important to remember that the success of any peacekeeping or peace-enforcement operation depends on the diplomatic means of settling the differences and hostilities between the combatant nations.

The major distinction in regard to peace-enforcement operations is that they are combat operations. Depending upon the mission, a light or heavy force may be needed. We have seen lately that a heavy-light mix gives us the most flexibility. The point is that a fully equipped combat force with CS and CSS attachments is required.

Examples of peace-enforcement actions are Operations RESTORE HOPE and CONTINUE HOPE in Somalia. Peace-enforcement missions include, among others, cordon and search, search and attack, squad and platoon size patrolling, air assault operations, military operations in urban terrain (MOUT), live fire raids, and establishing base camps and logistical support. Implied tasks include operating with armored forces, employing close air support, clearing mines, and operating as part of a coalition.

Battle drills are an excellent starting point for training in these tasks. The focus needs to be on decentralized operations with direct responsibility to the squad leader. Scheduling MOUT and air assault training would also be beneficial, as would an emphasis on search and attack, raids, and patrolling.

The one mission that is not taught or trained much is cordon and search. In fact, the Jungle Warfare School at Ft. Sherman, Panama, is one of the few training areas that incorporate it into their program of instruction. Training in command and control and mine clearing can be conducted as it is presently done for peacekeeping missions.

The benefit of peace-enforcement operations is that the preparation time is greatly reduced. If called upon with little or no notice, a unit can usually accomplish the mission without much additional training. But the more time a unit has, the better it can prepare its forces by focusing on the missions listed. Another advantage of peace-enforcement operations is that the task force can train and often execute their usual wartime missions.

Peacekeeping operations differ with each situation; the sequence of peacekeeping, peacemaking, and peace enforcement may also differ. The result is several tasks being combined. If the forces do not rotate, then the peace-enforcement units may also be called upon to perform peacekeeping tasks. It may be possible to tailor or alter the force on the basis of the specific mission. Other possibilities include the handoff of responsibility to a UN force, but this is an issue yet to be resolved. The most difficult situation to prepare for would be peace-enforcement and peacekeeping operations, because the environment might prevent leaders from knowing until the last minute exactly what the task force configuration should be.

One of the most critical aspects of a peacekeeping or peace-enforcement operation is defining the rules of engagement (ROEs). For units serving as part of the UN, most peacekeeping operations are under Chapter 6 of the UN charter. The interpretation of this

chapter states that the peacekeeping force will fire in self-defense only if fired upon. Most peace-enforcement operations, such as that in Somalia, are under UN charter, Chapter 7. The interpretation of this chapter states that a peace-enforcement force may fire at anyone who fires or poses a hostile intent to hurt a member of the peace-enforcement force or another citizen of that country.

Part of the training process for any peacekeeping operation must therefore be ROEs. Creating different scenarios or situations to help soldiers practice the ROEs will help clarify in their minds the situations in which they can or cannot fire. The time to learn this is before coming under fire or getting into a situation that could cost a life.

The role infantrymen will play in the new world order is unclear. Will that role be part of the UN or a regional coalition? In what size and configuration should a task force be deployed? But it is safe to assume that a battalion task force will be the minimum size used, with a brigade task force as the standard. Forces may be placed on standby for peacekeeping or peace-enforcement operations. One thing that is clear is that we have to review our priorities for training.

We do not expect to face a major force in a full-scale war any time soon. We are more likely to find ourselves in a peacekeeping or peace-enforcement role, which will definitely be a joint operation, possibly a multinational or coalition force.

Commanders should examine their training and make sure they are ready to face the future. They owe it to their soldiers to ensure that they are ready to face any mission they may be assigned in the interest of creating or maintaining a peaceful environment for others.

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Dismounted Maneuver Live Fire

CAPTAIN FRED JOHNSON

No training prepares light infantrymen for the shock of combat as well as maneuver live-fire exercises. Conducting collective training tasks or battle drills under live fire conditions develops soldiers who are accustomed to the sounds of the battlefield, leaders who understand the lethality of the weapons they employ, and units that are capable of performing collective tasks and battle drills under the most challenging of training conditions.

A good live-fire, however, requires substantial effort. It takes hard work and detailed planning to develop a sound tactical scenario, well-thought-out resourcing, a comprehensive safety plan, and a thorough after-action-review (AAR) process.

The tactical scenario drives the live-fire exercise (LFX). In developing it, the commander assesses his unit's proficiency in its mission essential tasks and selects the collective tasks or battle drills he wants the unit to execute under live-fire conditions. The commander may choose to exercise a single task to focus all his efforts on a specific training deficiency, or he may incorporate several tasks or drills into an LFX. For instance, an exercise designed to improve the unit training level on knocking out a bunker could focus exclusively on that task. On the other hand, a movement to contact exercise might include the tasks of breaching an obstacle, clearing a trenchline, and knocking out a bunker. The size and training proficiency of the unit being trained generally determines the complexity of an exercise. In developing the scenario, it is important not to over-task

a unit, which would dilute the focus and invite mission failure.

The tactical scenario must be both realistic and doctrinally sound to prevent a rigidly set exercise or one that teaches bad habits. The LFX must be developed according to the doctrinal description of the task being trained. For instance, if the operation is a movement to contact, specific enemy locations should not be provided in the operations order (OPORD); by definition, a movement to contact is conducted when the enemy's disposition is unclear. Additionally, the target array must support the task and must be based on a situational template of the opposing force. This is important because the soldiers will associate the task with the LFX, and later refer to it in terms of how it was conducted during the LFX. Therefore, the frame of reference must match events that may take place on the battlefield.

TLPs AND REHEARSALS

An OPORD should be written on the basis of the tactical scenario and issued to the unit to start the troop-leading procedures and rehearsals that are critical to a successful exercise. As part of the events preceding the LFX, the commander should attend the OPORD of the leader executing the live-fire so he can evaluate the subtask *prepare for combat* and also to determine whether the subordinate's plan is doctrinally sound and operationally safe. When time permits, in fact, it is desirable to have the subordinate leader present his OPORD to the evaluator before issuing it to the sol-

diers. This gives the evaluator an opportunity to catch errors before they are briefed to the element.

Finally, a training and evaluation outline (T&EO) must be developed to provide the unit with the training objectives of the exercise. Fortunately, the T&EOs are in the Mission Training Plan (MTP) manuals and provide the task, conditions, standards, and performance measures for all collective tasks and battle drills that may be executed under live-fire conditions. The outlines for the tasks should be identified far in advance of the LFX to allow the leader time to conduct the training that is necessary for a successful exercise.

The most critical aspect of developing a successful LFX is ensuring that it is properly resourced. Resourcing includes the selection and procurement of training areas, ammunition, supplies and equipment, transportation, targets, and communications assets, as well as the identification of the personnel required to run the exercise.

The training area must complement the tactical scenario and meet the conditions in the T&EO so the training will be realistic. Once the scenario has been determined, the commander should conduct a reconnaissance of all training areas that will accommodate LFXs. This is of particular importance for non-standard ranges where an objective will have to be constructed and range fans developed.

Ideally, the training area and range fans should allow the unit to conduct doctrinally sound movements. For instance, if the tactical scenario requires a unit to assault, the leader should have

the option of maneuvering to the flank of the objective. Unless the conditions outlined in the T&EO dictate, open areas should not be used for light infantry LFXs. Of course, this depends on the unit's level of proficiency and the training objectives of the exercise.

To fully realize the lethality of a light infantry squad, platoon, or company, all weapons organic to the unit, as well as those that would be in support, should be employed in the LFX. To ensure that this happens, all available ammunition should be considered and forecast. Ammunition for all weapons assigned to the unit should be requested, but too often, ordnance such as 40mm (smoke, illumination, high-explosive, or TPT), sniper, tracer, hand grenades (fragmentary or simulators), and AT4 (high-explosive or sub-caliber) are left off the forecast. In addition, 60mm and 81mm mortars, artillery, attack helicopters, and engineers (with demolition and bangalore, if needed) should be requested to support the exercise.

The actual construction of the range requires the assembly of an extensive list of supplies and equipment; therefore, a checklist of all necessary items should be compiled and reviewed several weeks before the exercise. The day before range construction begins, the equipment should be stockpiled and inventoried by the officer in charge (OIC) to ensure the range preparation goes smoothly. The OIC should also have a detailed plan for range set-up and an outline of responsibilities for the personnel assisting in its construction. The end product of these efforts should be reflected in training units moving directly off their transportation into the training event with minimum distraction.

Targetry and other training aids are a key part of achieving realism in the LFX. There are targets that can be either constructed or requested through range control that not only provide the visual effects but also afford the marksmanship feedback that is critical for a truly great exercise. Although the E-type target is the most commonly used, it is the least realistic and requires mod-

ification between iterations of the exercise to ensure feedback. This target can be improved by putting balloons or paper plates on it to record hits and by placing uniforms on the silhouettes to provide realism.

Remote-controlled pop-up targets are excellent for marksmanship, cueing battle drills, and creating changing situations. The three-dimensional OPFOR plastic individual (TOPI) target is also very good and, with the remote, provides an excellent visual effect. The best target available is the OPFOR multipurpose individual (TOMI) target, a uniformed wooden skeleton with a balloon chest cavity that causes the target to fall when hit with live ammunition. The TOMI not only provides marksmanship feedback and realism; its uniform can also be searched by enemy prisoner of war (EPW) teams. It is particularly good when used in a trenchline or on an ambush LFX.

Creating the sights and sounds of the battlefield through the use of training aids and pyrotechnics greatly improves the effects of the targetry. The pneumatic machinegun is good for initiating enemy contact and cueing battle drills, but it tends to break down and should always have a back-up. Rubber dummies in uniform with priority intelligence information can be used for EPW and search team training. Grenade and artillery simulators and smoke should be employed by evaluators to further simulate combat situations.

A comprehensive safety plan is central to ensuring that soldiers are not unnecessarily jeopardized. The safety plan, driven by a thorough risk assessment, should always include rehearsals and backbriefs, as well as a detailed safety brief. It is important that the safety plan not detract from the realism of the exercise, but that it enforce sound procedures that will prevent fratricide in combat. Because there is no safety with white tape on helmets on the battlefield, there should be none during the LFX. Additionally, locking and loading and clearing weapons should be done at a location other than the range. The lead-

ers should be responsible for safety, not the numerous "lane-walkers" who follow the unit downrange.

The risk assessment is a comprehensive analysis of all the factors that may lead to injuries, and also a determination of the steps that will be taken to reduce the risks that are identified. A good risk assessment involves two phases:

The first assessment is done by the commander when he develops his concept. In making the assessment, he should weigh the proficiency of his unit against the complexity of the proposed LFX and then determine whether the soldiers and leaders are ready to perform the task under live-fire conditions. He should also analyze the weather, his soldiers' physical fitness, the terrain where the exercise will take place, whether it will be day or night conditions, the interval since his unit last conducted an LFX, and the personnel turnover since then.

The second assessment is conducted by an impartial party, usually from another company. This person should be taken through all stages of the exercise, from the issue of ammunition for it to its culmination. Ideally, this is done on the actual range, with the commander and OIC present to answer questions and make any necessary changes to the scenario. The risk assessment officer should then submit a written memorandum stating the possible hazards and the steps that will be taken to prevent injury.

Backbriefs and rehearsals, in addition to facilitating mission accomplishment, also reinforce safety by identifying possible hazardous situations and measures that can minimize the risk in those situations. Safety begins during troop-leading procedures following the issue of the OPORD.

The backbrief, which takes place immediately after the order, ensures that the subordinate leader understands the mission. Subsequently, the order further defines how the unit will execute the task. Again, each subordinate leader should brief his order to his leader before issuing it to his element. This allows the officer to determine whether the plan is sound and safe. Inspections

should be conducted at the same time to ensure that soldiers have the proper equipment and understand the safety measures of the LFX.

The rehearsal, the single most important event before the execution of the exercise, should include a blank-fire or MILES exercise with the commander and the OIC present. The unit should repeat the task until it is done safely and to standard before they are allowed to conduct the LFX. In a night LFX, the same sequence should be repeated.

Before soldiers lock and load their weapons and move out on an LFX, the OIC must give an extensive safety briefing. This briefing should include the range restrictions, procedures for handling weapons and ammunition, the signal for cease fire and the person who may call for it, a reminder to keep weapons on safe during movement, and when or whether soldiers will clear their weapons on the range.

The final product of the planning and resourcing should be a range packet that contains all the vital information for the LFX. The range packet is not just a checklist to ensure that all areas are covered; it can also be used for future training or passed to sister units for their use.

With the preparations complete, all that remains is for the unit to execute the LFX. The time spent in the preparations will pay off as the soldiers move from garrison into a highly realistic training environment that is the closest thing to combat they can expect to experience in peacetime.

The full value of a live-fire exercise can be realized, however, only if thorough AARs are completed immediately afterward. The AAR process should include three phases: a "hotwash" on the range, a formal AAR, and a written AAR.

The hotwash is conducted using the standard AAR format on the actual ground where the unit executed the LFX. The purpose of this first phase is to review lessons learned while they are still fresh in the minds of the soldiers and, if necessary, to conduct immediate retraining to correct deficiencies. As with any AAR, the facilitator should ask leading questions that allow the leaders and soldiers to identify strengths and

LIVE-FIRE RESOURCE CHECKLIST	
RANGE CONTROL Range Flag E-Type Targets Remote Targets TOPI Targets TOMI Targets Remote Batteries Remote Box TRAINING SUPPORT CENTER Pneumatic Machinegun OPFOR Dummies Practice Grenades Dummy Uniforms UNIT SUPPLY Warming and AAR Tents Space Heaters Light Set or Propane Lights Generator Tables and Chairs Pioneer Tools Fire Extinguishers Materials for Terrain Model Balloons or Paper Plates for Targets Duct Tape Staple Gun Engineer Tape Chemlites Garbage Bags Flashlights Five-gallon Water Cans Butcher Boards and Markers ARMORER Armorer Tools CLP COMMUNICATION Field Telephones Wire OE 254 Radios	S-3 Training Area Requests Ammunition Requests Aviation Requests MILES Requests Additional Communication Support SUPPORT PLATOON Troop Transport Vehicles Exercise Support Vehicles Ammunition Vehicle Ammunition Drop-off/Pick-up Class IV Required Pallets for Ammunition HHC XO Meals Required Hot Soup and Coffee Type of Meals (A/T/M) MEDICAL PLATOON Medics Front-line Ambulance UNIT HQ Range Regulations Appropriate Manuals PERSONNEL REQUIREMENTS Officer in Charge Safety NCO NCOIC Ammunition NCO and Detail Target Detail Reporting NCO RTOs Gate Guards Medics Combat Lifesavers Armorer Contact Team Drivers Mechanics Target Operator Range Construction Detail

weaknesses. This phase should focus on actions on the objective; and, if time permits, the unit should start at the point where enemy contact was made and walk through each phase of the operation as it occurred. The leader should reenact the events and make immediate corrections in areas of deficiency.

In the formal AAR, lessons learned are reviewed and procedures for more

successful execution are developed and refined. The focus is on the training objectives, strengths and weaknesses, and ways to correct deficiencies. This formal AAR is normally conducted off the range in a tent that has a terrain model of the entire area of operation and a detailed depiction of the objective. The site should be well-lighted and should also offer a place where the

soldiers can sit down and be warm and dry.

The AAR starts from the beginning of the operation with the leader's OPORD and ends with actions on the objective. The training objectives should be listed on a butcher board so all soldiers can see them. The objectives should be addressed in sequence as they occurred and the status of training should be identified (T for trained, P for needs practice, or U for untrained). An additional butcher board should be used for notes on strengths and weaknesses and ways to improve.

Finally, a memorandum on the

lessons learned is written in the days following the exercise. This written AAR is used as a reference for future training to prevent repeating the same mistakes and also to share lessons with sister units. The memo should begin with a description of the concept of the exercise and the training objectives. The body of the memo should include all the lessons learned from the exercise. The conclusion should identify how the lessons can be incorporated into future training.

Live fire exercises both develop the skills critical to success on the battlefield and test the unit's ability to close

with the enemy. Infantrymen throughout our nation's history have mastered the skills and have been successful in combat; and units that continue to train and practice with live fire exercises will be well prepared for the next conflict.

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Counter-reconnaissance HMMWVs

CAPTAIN MARK N. GRDOVIC

In military operations throughout history, we have seen that when the scouts succeed in their mission, the battalion usually succeeds as well. The opposite also holds true. It therefore seems reasonable that a battalion could improve its chances for success by placing equal emphasis on defeating enemy scouts and on seeing that its own scouts succeed.

Unfortunately, counter-reconnaissance has never received a great deal of emphasis in terms of defined doctrine or tactics. Scout platoons often have counter-reconnaissance as an additional task; but it is at least as difficult and complex as reconnaissance and should receive the attention and planning of a *mission* instead of a task and should be treated accordingly.

Often, units combine elements of an antitank platoon with those of a scout platoon to accomplish this dual mission, which is sometimes referred to as a

SCAT (scout/antitank) mission. The SCAT configuration can be broken down further into one of two task organizations:

The first is to combine the scout and TOW elements to form a series of hunter-killer teams. This method is generally used during offensive operations where well-defined engagement areas (EAs) are not likely. It also works better when the team can be augmented by armor whose firepower and shock effect can quickly destroy enemy reconnaissance forces.

The second method is to have a pure counter-reconnaissance platoon working with a pure reconnaissance platoon. Separating the elements enables the commander to separate these related missions from each other, which allows for more detailed planning for each mission and less interdependence between them. If one element attempts to conduct both missions at the same time, it

may do neither of them well, and both will fail. This method is generally used during defensive operations in which the TOW elements can use well-established engagement areas.

I want to outline a method we used effectively when I was a battalion anti-tank platoon leader in the 3d Battalion, 47th Infantry, 2d Armored Cavalry Regiment (ACR)(Light)—formerly the 199th Separate Motorized Brigade—during a National Training Center rotation. Motorized infantry (now referred to as light cavalry), is particularly well suited for such missions because of the unique configuration of the equipment on hand (Figure 1):

The scout platoon consists of ten hard-shell high-mobility multipurpose wheeled vehicles (HMMWVs) (M1025/1026), equipped with five M2 .50 caliber machineguns and five MK-19 40mm grenade launchers.

The antitank platoon consists of four M966 TOW HMMWVs, one M1026 for the platoon leader with a MK-19, and one M998T with an M2 machinegun for the platoon sergeant. (The M998T is a cargo HMMWV modified for troops, with an added roll cage and gun mount.) Another unique feature of the TOW vehicles we had was an M249/M60 machinegun mount on the side of the turret, which greatly improved the platoon's ability to protect itself from a dismounted threat.

Few would argue that a vehicle whose thickest armor is the windshield can do the same mission as a Bradley fighting vehicle (BFV) or an Abrams tank. While the HMMWV cannot match the firepower and armor protection of a BFV or a tank, it does compare better in the areas of air deployability for both fixed and rotary wing aircraft, its ability to remain undetected and its ability to meet its self-sustainment and logistical needs. Most people would agree that the best defense against enemy fire is to remain undetected; this is not to say that the HMMWV is a better vehicle than the Bradley but that both have a place in certain missions. It also illustrates that in a motorized unit the requirement for detailed planning leaves little room for error during execution.

Counter-reconnaissance during offensive operations without some sort of shoot-on-the-move capability or air cavalry support is extremely difficult. Although neither of these capabilities currently exists in the 2d ACR, a unit of this type is particularly well-suited for counter-reconnaissance operations during defensive missions. The method used most successfully in our unit was that of the scout platoon establishing a screen of four to eight observation posts (OPs) and the AT platoon covering two or three engagement areas to the rear of the screen. These engagement areas were along suspected enemy avenues of approach for enemy reconnaissance elements (Figure 2). The scout platoon was often augmented with one or two teams using UAS-11 vehicle-mounted TOW sights or a combat observation and lasing (COLT) team, or both. This greatly increased the scouts' observation capa-

bility and kept the TOWs off the screen line. No enemy reconnaissance elements were to be engaged from the screen line, which reduced the chance of detection. In this case, the platoon did not attempt to conduct both reconnaissance and counter-reconnaissance missions.

The scout screen could not engage the enemy reconnaissance and still remain in place to observe the enemy combat reconnaissance patrol, the forward support element, or the main body forces. Even with indirect fire, scout elements would have compromised their positions and possibly the position of the mortar or artillery unit while engaging only two or three enemy vehicles. The employment of separate elements, on the other hand, allowed the enemy reconnaissance to be destroyed by the antitank unit after they had passed through the screen line.

If this type of engagement is successful, it gives the enemy a false idea of our forward line of own troops (FLOT), based on where his units were engaged. This will allow the screen to observe the follow-on units in movement formation instead of battle formation, allowing the screen to develop a much better artillery target than the previous handful of enemy reconnaissance vehicles.

This is where the use of Copperhead rounds guided in by the attached COLT teams proved most effective. If enemy artillery is called in, it should be on the now abandoned position of the antitank forces, who are usually two or three kilometers to the rear of the screen line.

This requires the antitank forces to withdraw immediately after the engagement, whether it has succeeded or not. When an engagement does not succeed, the original scout OP can usually main-

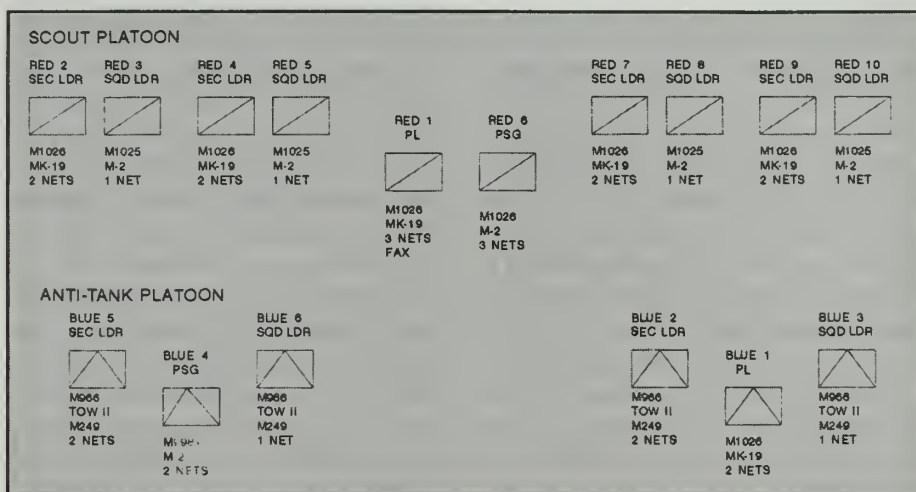


Figure 1

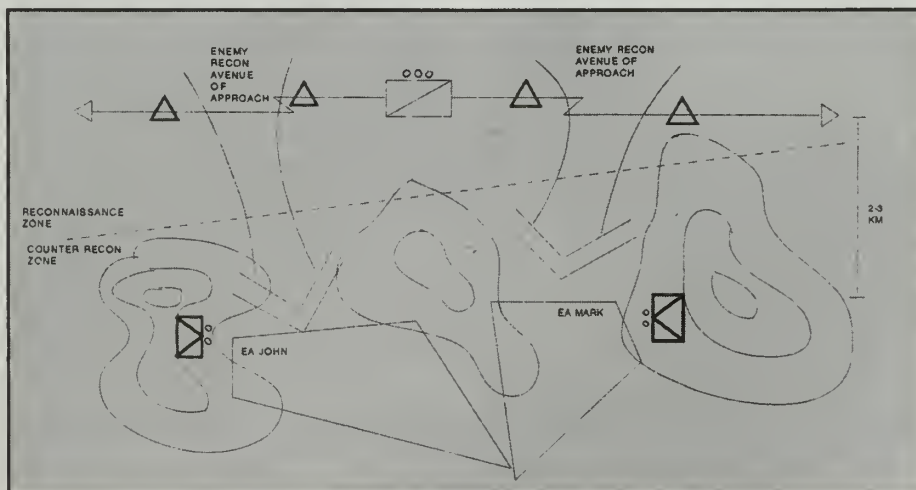


Figure 2

tain contact with the enemy elements and use any direct or indirect fire that may be needed.

Another advantage of the scout/antitank team is that if the scout screen is compromised, the antitank element can usually render assistance quickly. If an OP is destroyed, the antitank element can also act as a back-up or replacement. Often a rifle platoon can be attached to this element, but this proved useful to us only when the area of operations could not be covered by TOW fires—such as on a dismounted infiltration route, for example. The rifle platoon should not be used to provide additional firepower or security for the scout or antitank platoons. If it is, it will usually compromise the position and cause the mission to fail. If too many vehicles are clustered in the forward area, an operation of this type can easily turn into a weak defense.

In an infantry battalion, the scout platoon leader needs to be the commander of the forward area for the operation. Both the antitank and the scout platoons work for the battalion commander and report directly to him or the S-2. Having a separate commander for this element would only add an unnecessary link in the chain of command and lead to confusion and delay.

In a cavalry troop, the troop commander serves as the link between the pla-

toons and the squadron commander. But in a light ACR squadron, there are three troops with two scout platoons and two antitank platoons each. When the scouts have activity, they have priority. When the enemy reaches the counter-reconnaissance belt, the AT platoon leader has priority.

During an actual engagement, the OPs talk to the scout platoon leader or platoon sergeant and the section-sized engagement areas talk to the AT platoon leader and platoon sergeant. The two platoon leaders and platoon sergeants all talk to each other. Some methods have the OPs talking directly to the engagement area or the scout platoon leader controlling half the screen and the corresponding engagement areas, and the AT platoon leader doing the same with half the scout platoon. This may be convenient, but it is wrong. The forward area should not be divided vertically into left and right corridors, but horizontally into two belts (reconnaissance and counter-reconnaissance). Engagement areas should not be the responsibility of the scout platoon leader, nor should surveillance OPs be that of the AT platoon leader, although on occasion those responsibilities may overlap.

An engagement area is often confused with a defense. In a defense you hold terrain; in an engagement area you destroy the enemy. Although a defense

may have an engagement area (usually a deliberate engagement area), you never defend an engagement area. In this mission, we would prepare hasty engagement areas. The terms *hasty* and *deliberate* in this case imply intent rather than time available. We do not plan to stay in our positions after the initial engagement, and the forward area usually does not allow for digging-in a vehicle. This requires maximum use of the terrain for hide positions.

In planning, the set-up is always according to standing operating procedure (SOP). The order of OPs and the antitank section is always the same. The AT platoon leader stays to the rear of the scout platoon sergeant for half of the screen, and the AT platoon sergeant stays to the rear of the scout platoon leader for half of the screen (Figure 2). Once the platoon leaders receive an enemy situation, including avenues of approach, graphics, fire support plan, and a commander's intent/mission, they should be able to make their combined plan, brief their subordinates, and be moving within 30 minutes. These forces need to be in position 48 to 72 hours before the expected arrival of the enemy's main body. The information required for planning could be sent by radio or by facsimile machine, if needed. Normally, the scout platoon leader and I would agree on a plan within minutes after analyzing the terrain. He would tell me where he thought his OPs would be, and I would tell him where the engagement area would be. We would agree on any additional graphics or terrain index reference system (TIRS) and brief our men.

The section leaders would then spend a few minutes planning the specifics of their section engagement areas and prepare to move out. As the antitank platoon leader, I would inform the section leaders on the enemy situation and where their section engagement areas would be. On the basis of this information, they would examine the flanks of the engagement area, looking for a withdrawal route. Further planning would be done by following the checklist shown here. Once in position, they would confirm or alter their plan



M996 TOW II with M249 machinegun alongside on turret.

ENGAGEMENT AREA CHECKLIST

HASTY (YOU WILL NOT HOLD THIS GROUND FROM THE ENEMY):

- Establish section or squad rally point before moving into position.
- Stop vehicle before occupying the position so the TC can dismount, recon, and guide it into position. The vehicle should back into the position if rapid escape is needed.
- Plan a withdrawal route with enemy observation in mind.
- Identify dead space and avenues of approach.
- Identify trigger line to engage and disengage.
- Plan alternate position.
- Confirm location (using GPS if available) and left and right limits with a compass and laser range finder.
- Convert the data to the map, then convert it to TIRS and send by radio to platoon leader. (Each section leader sends data for his section's limits and all vehicle positions.)
- Note the grids you may want fire support on.
- Put passive air defense measures in effect.
- Maintain surveillance of EA. During the day, pull the vehicle into a hide position, and maintain an OP with binoculars. At night, use night vision goggles and thermal imaging.
- Institute rest plan, one man down and two men up at all times while in a forward area.

DELIBERATE (YOU WILL DEFEND THIS GROUND FROM THE ENEMY):

- Set in obstacles.
- Lay communication wire.
- Develop a range card if a relief in place is required.
- Dig-in vehicles and personal fighting positions (the vehicle is insufficient cover against artillery). Do not dismount the TOW missile system unless the vehicle has been destroyed.
- Dig-in alternate and supplementary positions when time and assets permit.
- Cache ammunition at position (use TOW missiles from cache first to keep the vehicle rack loaded).
- Use the laser range finder to determine whether targets are in range rather than a man-made target reference point (TRP). If no GVS-5s are available, use existing features for TRPs; for example, an intersection rather than a VS-17 panel, which will draw attention and enemy artillery.

position and its left and right limits, and the TIRS would indicate the range of that limit at the same time. I would plot range fans for both sections on my map. Once all the data had been sent to me, I could adjust limits over the radio just by looking at my map. This method is accurate if a global positioning system (GPS) is used in conjunction with a compass for limits. During this time, the scout platoon leader was doing the same with his OP positions. As soon as possible, we would exchange our platoon positions through TIRS. Usually within one hour, each leader would have eight OPs and two engagement areas plotted on his map, and it was all done in secure code using TIRS.

Often, the topic of weapons' range comes up when planning engagement areas. Range is a great advantage if you have it, but your plan should not be based on it. A 2,000-meter flank shot with a TOW is always better than a 3,500-meter frontal shot, especially since many enemy vehicles (such as T-64Bs and T-80s) can out-range a TOW II with an AT-8 SONGSTER missile. This is the kind of specialized knowledge a counter-reconnaissance or anti-tank leader needs.

In terms of command and control during an operation, the section leaders control any engagements. The platoon leader or platoon sergeant may be located near their position, but it is still a section engagement area. The platoon leader and platoon sergeant primarily act as a communication link between the sections and platoons and company and higher echelons. They would also provide emergency cover with their MK-19 or M2 machinegun, cover the section's withdrawal, and provide resupply. The scout OPs to our front normally notified their platoon leader and platoon sergeant, who would notify me or the AT platoon sergeant, but could notify the AT section to their rear if communication with higher or adjacent units failed.

A final benefit to separating the forces into reconnaissance and counter-

reconnaissance groups is the flexibility it allows the commander during the battle. Once the enemy reconnaissance element has been destroyed or disrupted, the antitank platoon has completed its part of the mission. The scouts could now remain in place to observe the enemy's main forces, or withdraw. This would not have been the case if the scouts had become decisively engaged with enemy reconnaissance forces. The antitank platoon can conduct a rearward passage of lines and become a reserve or counterattack force for the unit or, depending on the battlefield or the disposition of forces, can go into a hide position and link up with main forces later.

The ability to slingload the platoon further enhances the commander's options and the platoons' capabilities. Either way, the antitank platoon needs to be moved after the counter-reconnaissance portion of the battle. Leaving these forces in place contributes little to the battle at this point and nothing to their survivability. The reconnaissance portion of the battle continues long after the counter-reconnaissance action is over.

Anyone who has ever conducted mounted reconnaissance operations knows how difficult they can be, and counter-reconnaissance operations are no less complex. Counter-reconnaissance should not be treated like an additional task but as the important separate mission that it is. The only simple part of counter-reconnaissance is the understanding that if it causes the enemy's scouts to fail, his main forces will likely fail as well.

Captain Mark N. Grdovic served in the 3d Battalion, 47th Infantry as a rifle platoon leader, antitank platoon leader, and rifle company executive officer. He recently completed the Infantry Officer Advanced Course. He is a 1989 ROTC graduate of State University of New York College at Cortland.

accordingly. The final site layout would be sent by TIRS.

Each section leader would send his

OFFICERS CAREER NOTES



FUNCTIONAL AREA DESIGNATION, YG 1989

The functional area (FA) designation process for officers in Year Group 1989 is scheduled to begin in July 1994. If you are in this year group, a letter will be mailed to your home address, instructing you to complete a mark-sense preference form and comment sheet and return them by a specified date in September. It is important that you read and follow the instructions in completing and returning the preference form; otherwise, you will not have any input in the designation process.

The preference form asks for four possible FAs for your designation. Since you will spend a major portion of your career in your designated functional area, you should weigh all four choices carefully. We at Infantry Branch will make every attempt to place you in one of those choices, but the needs of the Army may dictate that it not be your first choice.

We encourage you to read DA Pamphlet 600-3, *Commissioned Officer Professional Development and Utilization*, in the Officer's Ranks Update. The following are the functional areas currently available for infantrymen to consider:

FA 39, Psychological Operations/Civil Affairs

FA 41, Personnel Programs Management

FA 45, Comptroller

FA 46, Public Affairs

FA 48, Foreign Affairs

FA 49, Operations Research/Systems

Analysis

FA 50, Force Modernization

FA 52, Nuclear Weapons

FA 53, Systems Automation

FA 54, Operations, Plans, and Training

To help with this process, make sure your undergraduate and graduate col-

lege transcripts are in your file at Infantry Branch. If GRE or GMAT scores are available, ensure that they are forwarded for inclusion in your file. A current DLAB (Defense Language Aptitude Battery) score of 85 or above is required for either FA 39 or FA 48, but documented language ability is also favorably considered.

The designation process is currently scheduled to conclude in November or December, with the results to be released in January or February 1995.

OFFICIAL PHOTOGRAPHS

A board member's first impression of you is the one made by your official photograph. Right or wrong, this impression sets the tone for the review of your file; it therefore demands careful preparation.

If you follow the official guidelines for the fit, wear, and appearance of the uniform, the photo will make the impression you want it to make. Of all the errors we see on official photos, the following are the most common errors:

- Leadership tabs or Infantry cord being worn.
- Trousers or sleeves too short or too long.
- Wrinkled trouser creases.
- Bulging pocket or coat flaps.
- Incorrectly placed awards and decorations.

Prepare for your photo first by researching Army Regulations 670-1 and 640-30 to ensure that your uniform and everything on it are correct and authorized for wear in an official photo. Next, have someone double-check your

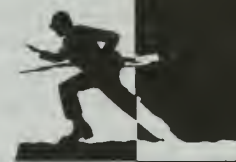
efforts. (It is better for a friend, peer, or supervisor to find an error than the members of a selection board.) When you go to the studio for the session, take a friend to help you with the final preparations—taping, straightening, and aligning your uniform for the best possible result. It is risky, at best, to assume that a potentially overworked photographer can take the time to help you. And finally, *carry* your uniform to the photo lab on a hanger in a bag. Many photo labs will turn you away if you arrive for your photo wearing the uniform you intend to wear in the photo.

When you get your photo, check it carefully and, again, have someone else check it too. If it is not right, have another one made. Don't submit an inferior photo just to save time or trouble.

Feedback from promotion boards clearly indicates that the boards use an officer's photo to formulate their opinions about him and therefore their decisions concerning him. A current high-quality photo tells the board a great deal about you; it shows that you are concerned about your career and about the board results. Your careful preparation for and submission of a good photo ensures that the first impression you give a board member is a positive one.



BOOK REVIEWS



Red Thunder, Tropic Lightning: The World of a Combat Division in Vietnam. By Eric M. Bergerud. Westview, 1993. 328 Pages. \$24.95. Reviewed by Dr. Joe P. Dunn, Converse College.

Eric Bergerud's 1991 book, *The Dynamics of Defeat: The Vietnam War in Hau Nghia Province*, which dealt with the 25th Infantry Division's area of operations (AO), is one of the very best books on the Vietnam War. Although less seminal than the earlier work, *Red Thunder, Tropic Lightning* is another fine and valuable book. It is a collective glimpse into the war as the men of one combat division saw it.

The 25th Division served in Vietnam from January 1966 to the Spring of 1971 in one of the more active AOs. The unit suffered more than 5,000 deaths, one of the highest casualty rates in the Army. Although it was not as well known as the 1st Infantry, 1st Cavalry, or 82d Airborne Divisions, no unit produced a richer literary heritage. Al Santoli, whose two oral histories, *Everything We Had* and *To Bear Any Burden*, served with the unit, as did Larry Heinemann, whose *Close Quarters* and *Paco's Story* are considered among the best novels of the war. But the Tropic Lightning Division is probably best remembered as unit veteran Oliver Stone's inspiration for the movie *Platoon*.

This book is not a narrative history. Rather, it relies on lengthy oral interviews to capture perceptions on such topics as physical surroundings, weaponry, battles, the medical effort, the Vietnamese, and morale. Although the interviews represent only one unit, clearly this is a universal and quintessential account of Vietnam combat. Bergerud's ability to weave in his own explicative narrative—on the basis of years of works in the archives and the long, candid interviews—makes this one of the best of the many oral histories.

This is a powerful and moving book that says as much about the war as is possible to capture on paper.

Lost Victories: The Military Genius of Stonewall Jackson. By Bevin Alexander.

Henry Holt and Company, 1992. 384 Pages. \$30.00. Reviewed by Colonel Howard W. Crawford, Jr., United States Army Retired.

This short history of Jackson's battles is easy to read, but there is not much new in it. The book's main thesis—that Jackson, not Lee, had the strategic vision necessary for the South to win—remains unsubstantiated. At best, the book provides a quick chronological overview, chapter by chapter, of Jackson's tactical engagements. None of these short chapters is insightful, and none of them supports the author's thesis. He shows limited understanding of strategy in a contemporary setting and often drifts into operational concepts that are clearly regional in both execution and design, without defining a vision that was to have guided the south's strategy.

Alexander does not seem to understand vital interests or center of gravity as they relate to strategic application. He postulates that Jackson somehow had a clearer vision in the fog of war than Lee had. The attacks on Lee in almost every chapter are the most disturbing aspect of the book. Instead of proving his thesis through facts, the author continually compares Lee to Jackson as if he had forgotten that the South, with its limited resources and experience, did not have a well-conceived strategic plan from the outset. This was a war of trial and error, and there was plenty of blame to go around. Alexander mixes tactical execution with strategic thinking at the expense of the thesis that he laid out in his introduction.

Save your money. This is not a book to add to your professional library on strategy.

The Battle of Belmont. By Nathaniel Cheairs Hughes. University of North Carolina Press, 1991. 307 Pages. \$24.95. Reviewed by Major Don Rightmyer, United States Air Force Retired.

Historical accounts of Ulysses Grant's Civil War career normally begin with the capture of Forts Henry and Donelson in early 1862 and end with the famous encounter between him and General Robert E. Lee at

Appomattox Courthouse in 1865—touching on the Shiloh, Vicksburg, and 1864 Virginia campaigns in the process. A much-overlooked and very interesting segment in Civil War history is Grant's first significant campaign in November 1861 and the subsequent battle at Belmont, Missouri.

Belmont itself was nothing more than a steamboat landing on the western bank of the Mississippi. Just across the river, however, lay Columbus, Kentucky—"the Gibraltar of the Mississippi"—which became the most heavily defended spot in North America during the early days of the war. Brigadier General Grant, having been given command of the Union forces in southeast Missouri and southern Illinois, wanted to attack Columbus but was restrained from doing so by his department commander, General John C. Fremont. Showing the fighting qualities that would eventually propel him into the public eye (and that of President Lincoln), Grant said, "What I want is to advance." When Fremont was relieved by the president, Grant got the green light.

Author Hughes sets the background for the story of the Belmont campaign by providing some good information about the manner in which Grant organized, trained, and conditioned his green forces in preparation for the expected battles.

When Grant was ready, the Union forces packed aboard troop transports and deployed down the Mississippi River from Cairo, Illinois, accompanied by the Navy's timberclad gunboats, *Tyler* and *Lexington*. After giving the Confederate forces a scare by tying up overnight on the Kentucky shore, the Union troops landed northwest of Belmont landing on 7 November 1861, while the gunboats proceeded downriver to duel briefly with the Columbus batteries.

Grant deployed a total of five regiments (numbering 2,500 men) against an initial Confederate defense of 3,000 troops. The Union infantry, artillery, and cavalry forces were well integrated against the poorly positioned defenders, resulting in a complete rout and capture of the rebel camp. The day's fight continued for nine hours with an additional 2,500 Confederate troops being ferried across the river from Columbus

throughout the day. As the fighting drew to a close and Grant moved his forces back to the boats for withdrawal, his column was severely mauled by Confederate troops who were able to flank him.

Despite the long duration of the battle, each side suffered only about 600 casualties, certainly light compared to the battles that lay ahead of these same troops. The question of who won Belmont remains unsettled, but Grant's moderate success with his land-water campaign obviously led to much greater successes with similar combined operations at Forts Henry and Donelson two months later.

Author Hughes previously wrote an outstanding military biography of Confederate General William J. Hardee, who was known as an authority on infantry tactics in the pre-Civil War army. This equally well-written book includes several excellent battlefield maps that help the reader understand the battle and the troop movements. It is a worthwhile illumination of a very little-known and little-appreciated part of the early days of the Civil War.

***Wavell in the Middle East, 1939-1941: A Study in Generalship.* By Harold E. Raugh, Jr. Brassey's (UK), 1993. 323 Pages. \$50.00.** Reviewed by Lieutenant Colonel Albert N. Garland, United States Army Retired.

The author of this study, oddly enough, is a serving U.S. Army officer, but one who has long been interested in British military history, particularly the 19th and 20th centuries. He has written extensively in that field, and during his research and writing grew more interested in the life and times of Field Marshal The Earl Wavell, who—as General Sir Archibald Wavell—served as Commander in Chief, India, from July 1941 to June 1943, and then as Viceroy of India until 1947.

Wavell, who had been commissioned in the Black Watch Regiment in 1901, was very much a friend of the infantry throughout his long and distinguished career, and in an April 1945 letter titled "In Praise of Infantry," let his feelings for infantry soldiers be more widely known. Perhaps this is the trait that drew the author of this book to Wavell, for Major Raugh himself is an infantryman.

Raugh's book grew out of his doctoral dissertation, completed while he was serving as an instructor in history at the United States Military Academy from 1988 to 1991. He has mined official records and personal rem-

iniscences on both sides of the Atlantic and has demonstrated an ability to write more coherently than most dissertation writers. There were times, however, when he let his feelings get the better of him, and certain of his rhetorical flourishes might have been toned down, if not deleted entirely.

In general, Raugh accomplishes what he set out to do and, in some cases, more. The book traces Wavell's career from his commissioning to his assumption of command in Cairo in July 1939. Seriously wounded while serving with his regiment in 1915 on the Western Front (he lost his left eye), Wavell eventually returned to duty during the war and held a variety of staff positions, primarily in the Middle East, where he came to know and admire General Sir Edmund Allenby.

Between the wars, he held a variety of command and staff positions, became an excellent writer, and proved "a gifted speaker and lecturer," and earned a "reputation as the originator of vigorous realistic, and challenging training." Unfortunately, along the way, he developed a strong, almost intense, dislike for the mixture of politics and military matters that he saw at the highest levels; at the same time, however, in the presence of politicians, he could not bring himself to speak out boldly and forcefully. Rather, he seemed to withdraw into some sort of shell, which bordered on stubbornness, and by his subsequent actions appeared to indicate a dislike for the politicians around him. He was soon to discover that politicians do not take to people who dislike them, particularly their key subordinates.

Raugh—feeling that Wavell had been consigned to the dustbin of history upon his death in 1950—set out to resurrect the man and his career. This he does quite well, even though the focus of his story is on a single two-year period. But what a period it was! So at the same time Raugh has shone the spotlight on that period and given us a good, concise history of Balkan, Middle East, and East African military operations about which most U.S. military men know little. (A greater awareness of those operations may have better prepared us for actions in those same areas.)

Raugh admits, of course, that Wavell was not a "perfect" general, but points out that Wavell—as the commander of an operational theater stretching 2,000 miles east to west and 1,700 miles north to south—"bore a mantle of responsibility greater than [that of] any other British general, with the possible exception of the Chief of the Imperial General Staff in the early years of the Second

World War." Raugh also reminds us that "from February 1941 to July 1941. . . Wavell was directly responsible for the conduct of some eight campaigns, with three on hand at any one time and five running simultaneously in May 1941." In the end, Raugh concludes that "Wavell. . . clearly performed his duties as Commander-in-Chief, Middle East, in a highly laudable and outstanding manner."

Unfortunately for Wavell, as Raugh makes abundantly clear, his political boss was Winston Churchill, a domineering figure Wavell could not handle. From their very first meeting on 8 August 1940, Churchill came away with the impression that Wavell lacked "offensive spirit, resolution, and mental dexterity." Raugh, who is extremely critical of Churchill, believes that "nothing could have been further from the truth." Eventually, Wavell fell prey to Churchill's beliefs and was moved to India where he would be out of the way, or so Churchill thought. Thus, to Raugh, Wavell was a scapegoat whom the "Churchillians" have vilified down to the present time.

Raugh certainly sets the record straight, but more needs to be done, particularly on Wavell's feelings and attitudes about and toward politicians. Perhaps he will take up the charge at a later date. For the time being, U.S. military professionals can gain much from this book, particularly as it pertains to military leadership and its influence at all ranks.

***SAS: Secret War in South-East Asia.* By Peter Dickens. Ballantine Books, 1992. 300 Pages. \$4.99, Softbound.** Reviewed by Leroy Thompson, Manchester Missouri.

This new paperback edition of Peter Dickens' classic work on the Special Air Service (SAS), first published in 1983, makes more readily available one of the finest studies of the SAS yet published. This book was one of the first works on Britain's premier special operations unit to be based directly on first-hand accounts of members of the 22d Special Air Service Regiment who had served in the Borneo "Confrontation." Termed a "confrontation" rather than a war, the Borneo campaign offers a view of classic SAS employment in the mission of border surveillance, cross-border raiding, and indigenous training.

One of the factors that has consistently made the SAS such an outstanding military unit is the core of experienced noncommissioned officers (NCOs) staffing the four-man patrol, which is the basic SAS opera-

tional unit. Dickens manages to capture the personalities of many of these NCOs superbly—so well, in fact, that even before the names were mentioned I recognized two friends who had served in Borneo from his description of their personality traits. This presentation of members of the SAS as dedicated, highly trained soldiers, instead of supermen, gives a far better feel for the regiment than many other works concerned more with myth than reality.

From the point of view of the infantryman, the most useful aspect of the book is that it traces the evolution of the SAS role in border security throughout the years 1963-1966. At the same time the U.S. Special Forces were developing their own border surveillance mission in Vietnam, their British counterparts were dealing with Indonesian infiltrators. The fact that the U.S. Special Forces and the SAS have traditionally carried out extensive exchange training, while the Indonesian Special Forces operating against the SAS had also been trained by the U.S. Special Forces, made this evolution of special interest to U.S. special warfare soldiers.

Additionally, while MACV (Military Assistance Command-Vietnam)/Special Operations Group operations were evolving in Vietnam, the SAS began carrying out cross-border operations into Indonesian Borneo, both for intelligence gathering and as "claret" operations to punish the Indonesians with raids. Once again, the fact that British operations were being carried out in a jungle environment at the same time as similar U.S. operations in Vietnam makes this book of special interest. Finally, while U.S. Special Forces personnel were training Montagnard tribesmen as scouts and irregulars, members of the SAS were training Ibans and other tribesmen as scouts and irregulars.

This book offers an excellent combination of fascinating anecdotes with well-documented operational narrative. It is highly recommended.

The Roots of Blitzkrieg: Hans von Seeckt and German Military Reform. By James S. Corum. University Press of Kansas, 1992. 288 Pages. \$29.95. Reviewed by Dr. Charles E. White, Infantry School Historian.

The development of the German doctrine used so effectively in the early years of World War II has captivated U.S. military readers for more than 50 years. This obsession with things German has often led Amer-

icans to misinterpret the past. Finally, James Corum has produced a well-written, well-organized, and comprehensively researched book that destroys the myths of popular history.

In *The Roots of Blitzkrieg*, Corum traces the critical transformations in German tactical doctrine, organization, and training in the years following World War I. He demonstrates conclusively that the development of German doctrine (erroneously called *Blitzkrieg*) was not due to Heinz Guderian, Adolf Hitler, the limitations placed on Germany's armed forces by the Versailles Treaty, or Soviet assistance. Rather, it was the general staff system—created by Scharnhorst during the Napoleonic wars, refined by Moltke during the wars of German unification, and maintained (in secret) after World War I by Hans von Seeckt—that created Germany's concept of mobile warfare. And, ironically, it was the peacetime military establishment of Germany's "democratic" Weimar Republic that provided the fruitful environment in which the German General Staff worked.

Corum shows how Hans von Seeckt guided the operations and policy of the *Truppe-namt* (the name given to the outlawed General Staff) during the years immediately following World War I. It was Seeckt who created the atmosphere that gave "visionaries" (such as Guderian) free rein to develop an "army of the future." Seeckt wanted a highly mobile force capable of executing operations aimed at encircling an enemy or the breakthrough attack (with superior tactics and weapons) if the enemy's flank could not be turned.

This splendid book is timely for the U.S. Army, because the situation facing the Army today is similar in many respects to the one that faced the *Reichswehr* in 1919. At a time when the U.S. Army is laying the foundations for fighting the nation's future land wars, this book can provide leaders with some valuable lessons on the development and implementation of sound tactical doctrine:

First, the Army must have a sound methodology or process for developing that doctrine. Second, those selected as doctrine writers must have great intellectual capacity. Third, realistic combat training that tests this doctrine must have absolute primacy over all other types of training. Finally, the Army must place a high priority on developing the individual initiative and reliability of the soldier.

Significantly, as Corum points out, all of these "lessons" have little to do with the

sizes of budgets. Faced with a massive reduction in force, declining resources, an unstable international situation, and a hostile domestic political environment, the *Reichswehr* nevertheless quietly and intelligently faced the problems of maintaining a small volunteer force, developing a sound tactical doctrine, and training an effective fighting force in times of austere fiscal limitations.

Will the United States Army be as wise? Those who read this book will have a better idea of how to approach and solve the problems facing the Army today.

A History of Military Medicine. Two volumes. By Richard A. Gabriel and Karen S. Metz. Greenwood Press, 1992. 551 Pages. \$110. Reviewed by Colonel Cole C. Kingseed, United States Army.

In their latest collaboration, authors Richard Gabriel and Karen Metz have written a comprehensive treatment of the history of medicine in the Western world from ancient Sumerian civilization to the present. The first volume addresses the subject from earliest times through the fall of Constantinople in 1453, while the second carries it from the Renaissance through the Vietnam War. The authors succeed admirably in their purpose of attracting attention to a largely unstudied subject and provoking others to think about new subjects in different ways.

What makes this history so applicable to today's Army is the focus on combat lifesaving techniques that characterized classical civilizations, as well as the emphasis on speedy evacuation that has been the hallmark of 20th century military medicine. As outlined by noted historian John Keegan, the authors view modern war as an "epidemic of casualties" that threatens to overwhelm the resources of traditional medical practices. This increase in lethality, in turn, has been offset to some degree by three emergent factors—the discovery of anesthetics and the principle of antiseptics, the advent of blood transfusions, and the discovery of antibiotics.

The factors that distinguish modern military medicine from its predecessors are the dispersion of combat forces over larger areas, the increased rates of destruction of locally engaged forces made possible by incredible increases in the rates of fire and lethality of conventional weaponry, and the greatly increased vulnerability of combat medical assets on the high-mobility battlefield.

The authors suggest that the key to survival on the modern battlefield may be more medical training in traumatic First Aid for all combat soldiers to the degree that they will be able to act as trained medics to halt bleeding and prevent shock. Current infantry commanders will recognize this message as the very foundation of combat lifesaving and casualty evacuation training.

Doctrine and Dogma: German and British Infantry Tactics in the First World War. By Martin Samuels. Greenwood Press, 1992. 225 Pages. Reviewed by Major Harold E. Raugh, Jr., United States Army.

There is still a great deal to learn about the development of tactics and doctrine, and about command and generalship, of the opposing armies during World War I. Unfortunately, Martin Samuels' *Doctrine and Dogma* provides little new insight into these important topics.

This study appears to be an unedited scholarly treatise. Its stated objectives are to analyze the development of German infantry tactics, "to examine the British attempt to adopt the German defensive system," and to compare and contrast the British and German armies. In attempting to do this, Samuels has divided the book into eight chapters, five of them devoted to the Germans and three to the British—an early indication of his bias.

The first chapter is little more than a synthesis of an unpublished 1939 Berlin University doctoral dissertation, and other chapters rely heavily upon this same source. The author suggests the British had no "up-to-date" defensive doctrine before they captured and reissued two outdated German manuals on the subject in December 1917. In making this assertion, he is either ignorant of or fails to consider the 1916 British War Office's *Notes for Infantry Officers on Trench Warfare*, a manual that set the pattern for most British trenches for much of the war. The chapter "British Training" is noticeably superficial and generally void of substantive analysis. These and similar omissions and errors in interpretation make this volume of doubtful value.

The author suggests that his "analysis is of more than merely historical interest." With its selective use of evidence to bolster a preconceived thesis, lack of understanding of British tactical and doctrinal development, and barely disguised admiration for the German Army, this book will be of little interest

to discerning military readers. Their money could be better spent elsewhere.

RECENT AND RECOMMENDED

Scouts and Raiders: The Navy's First Special Warfare Commandos. By John B. Dwyer. Praeger, 1993. 224 Pages. \$49.95.

Flames Over Tokyo: The U.S. Army Air Forces' Incendiary Campaign Against Japan 1944-1945. By E. Bartlett Kerr. Donald I. Fine, Inc., 1991. 348 Pages. \$22.95.

With a Black Platoon in Combat: A Year in Korea. By Lyle Rishell. Texas A&M University Press, 1993. \$24.50.

Payback: America's Long War in the Middle East. By John K. Cooley. Brassey's (US), 1991. 272 Pages. \$19.95.

Sandy Patch: A Biography of Lt. Gen. Alexander M. Patch. By William K. Wyant. Praeger, 1991. 264 Pages. \$49.95.

The Story of the Second World War. By Henry Steele Commager. First published in 1945. Brassey's (US), 1991. 352 Pages. \$23.95.

Norway 1940. By Francois Kersaudy. St. Martin's Press, 1991. 272 Pages. \$22.95.

DMZ Diary: A Combat Marine's Vietnam Memoir. By Jeff Kelly. McFarland & Company, 1991. 220 Pages. \$15.95.

To Command the Sky: The Battle for Air Superiority Over Germany, 1942-1944. By Stephen L. McFarland and Wesley Phillips Newton. Smithsonian Institution Press, 1991. 304 Pages. \$35.00.

Stalin: Breaker of Nations. By Robert Conquest. Viking, 1991. 346 Pages. \$25.00.

The Penguin Encyclopedia of Modern Warfare. By Kenneth Macksey and William Woodhouse. Viking, 1992. 373 Pages. \$29.95.

Writers on World War II: An Anthology. Edited and with a Foreword by Mordecai Richler. Knopf, 1991. 727 Pages. \$30.00.

The Collapse of Communism. By the Correspondents of *The New York Times*. Revised and Updated. Edited by Bernard Gwertzman and Michael T. Kaufman. Random House, 1991. 600 Pages. \$13.00, Softbound.

The Destructive War: William Tecumseh Sherman, Stonewall Jackson, and the Americans. By Charles R. Royster. Knopf, 1991. A Borzoi Book. 523 Pages. \$30.00.

Eyeball to Eyeball: The Inside Story of the Cuban Missile Crisis. By Dino A. Brugioni. Random House, 1992. 622 Pages. \$35.00.

The Fate of the Maine. By John Edward Weems. A reprint of the 1958 edition. Texas A&M University Press, 1992. 207 Pages. \$12.95, Softbound.

U.S. Army Uniforms of the Korean War. By Shelby L. Stanton. Stackpole Books, 1992. 256 Pages. \$39.95.

In the Eye of the Storm: The Life of General H. Norman Schwarzkopf. By Roger Cohen and Claudio Gatti. Berkley Books, 1992. 356 Pages. \$5.99, Softbound.

Warriors' Words: A Quotation Book from Sesostris III to Schwarzkopf. Sterling, 1992. 528 Pages. \$29.95

Military Fortifications: A Selective Bibliography. Compiled by Dale E. Floyd. Bibliographies and Indexes in Military Studies, Number 4. Greenwood Press, 1992. 384 Pages. \$59.50.

U.S. Fighters of World War Two. By Robert

F. Dorr. Sterling, 1992. 160 Pages. \$24.95.

U.S. Marines in Vietnam: The War That Would Not End, 1971-1973. By Charles D. Melson and Curtis G. Arnold. History and Museums Division of the United States Marine Corps, 1992. 311 Pages. \$21.00.

Rome's Enemies 5: The Desert Frontier. Men-at-Arms Series No. 243. Edited by Martin Windrow. Osprey, 1992. 48 Pages, Softbound.

The French Army in the American War of Independence. Men-at-Arms Series, No. 244. Edited by Martin Windrow. Osprey, 1992. 47 Pages, Softbound.

British Territorial Units, 1914-18. Men-at-Arms Series, No. 245. Edited by Martin Windrow. Osprey, 1992. 47 Pages, Softbound.

The Romanian Army of World War 2. Men-at-Arms Series, No. 246. Edited by Martin Windrow. Osprey, 1992. 47 Pages, Softbound.

German Tanks of World War II in Action. By George Forty. Sterling, 1992. 160 Pages. \$17.95, Softbound.

U.S. Tactical Air Power, Europe 1942-45. By Roger A. Freeman. Sterling, 1992. 48 Pages. \$8.95, Softbound.

A-6 Intruder Carrier-borne Bomber. By Robert F. Dorr. Sterling, 1992. 56 Pages. \$9.95, Softbound.

U.S. Marine Corps Scout-Sniper: World War II and Korea. By Peter R. Senich. Paladin Press, 1993. 217 Pages, Hardcover.

Modern Combat Helicopters. By George Sullivan. Facts on File, 1993. 120 Pages, Hardcover.

American Defense Annual. Edited by Joseph Kruzel. Lexington Books, 1993. 357 Pages, Hardcover.

The Imperial War Museum Book of the First World War: A Great Conflict Recalled in Previously Unpublished Letters, Diaries, and Memoirs. By Malcolm Brown. University of Oklahoma Press, 1993. 288 Pages. \$27.95, Softbound.

JG 26: Top Guns of the Luftwaffe. By Donald L. Caldwell. Published in hard cover in 1991. Ballantine Books, 1993. 440 Pages. \$4.99, Softbound.

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Rangers at War. By Shelby L. Stanton. Ballantine Books, 1993. 321 Pages. \$4.99, Softbound.

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A Proud American: The Autobiography of Joe Foss. By Joe Foss, with Donna Wild Foss. Pocket Books, 1992. 320 Pages. \$22.00.

Arms Limitation and Disarmament Restraints on War, 1899-1939. Edited by B.J.C. McKercher. Praeger, 1992. 272 Pages. \$55.00.

From The Editor

INTEROPERABILITY—SPEAKING THE LANGUAGE

The fact that operations other than war will occupy a great deal of our Army's time and effort in years to come should be no surprise. The United States and her allies have been involved in actions of this nature for some time, and have developed considerable expertise along the way. American, British, Belgian, Canadian, French, German, and Italian soldiers—to name just a few—have served with distinction in most of the world's hotspots, either alone or under the auspices of the United Nations.

The success of these operations is remarkable when one considers the language differences among the nations involved, and the cultural diversity of the areas in which these forces are deployed. The key to success in this area has been the ability of the participating nations' forces to plan, coordinate, and execute an array of complex operations in spite of—in most cases—the lack of a common language.

Interoperability is the name of the game, and we need to get good at it if we intend to remain a credible player. The Army of the 21st century, currently referred to as Force XXI, will have the challenge of meeting our worldwide commitments as the United States enters the next millennium, and the effort we will put into fielding Force XXI must include foreign language proficiency as part of the equation. While other nations have long included foreign language instruction—particularly English—as part of their leader development, we have placed less emphasis on this skill, relying instead on the ability of other nations to communicate in our language. This has often placed us at a serious disadvantage. Industry has long recognized that it must speak the host nation language if it is to remain competitive, and it is time for the Army to follow suit, for in a military context the word *competitive* translates into force protection and mission accomplishment.

The successful conduct of operations other than war will include noncombatant evacuation operations, human intelligence gathering, host nation support, and interoperability with nations that speak a language other than English; this will demand a much higher level of foreign language proficiency than we presently enjoy.

So how do we improve the foreign language skills of the force in the face of dwindling defense budgets and reduced manpower? We do it by making the most of the skills we already have on hand. Soldiers who are proficient in a foreign language can retain or increase that proficiency through reading, using tapes available at many libraries and education centers, and through contacts with others who also speak the language. (These language skills need to be reflected in soldiers' personnel records as well.) Tuition assistance, G.I. Bill benefits, grants, and any scholarships offered by local colleges are among the ways motivated soldiers can support their enrollment.

Local education centers can provide information on programs available, but it is up to the individual to take the initiative and determine the best course of action. Soldiers who have the motivation and initiative to learn a foreign language will become more versatile and broaden their assignment possibilities. They will also learn a skill that will serve the Army and our nation, and continue to be of value whenever they choose to leave active duty.

The Bill Mauldin cartoon on this month's cover—based on the U.S. 45th Infantry Division's landings on Sicily in July 1943, and in September 1943 on the coast of Italy itself—exemplifies the American soldier's ability to find humor even under the stress of combat. For that reason it has been selected for the issue commemorating the D-Day landings of 6 June 1944.

RAE

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